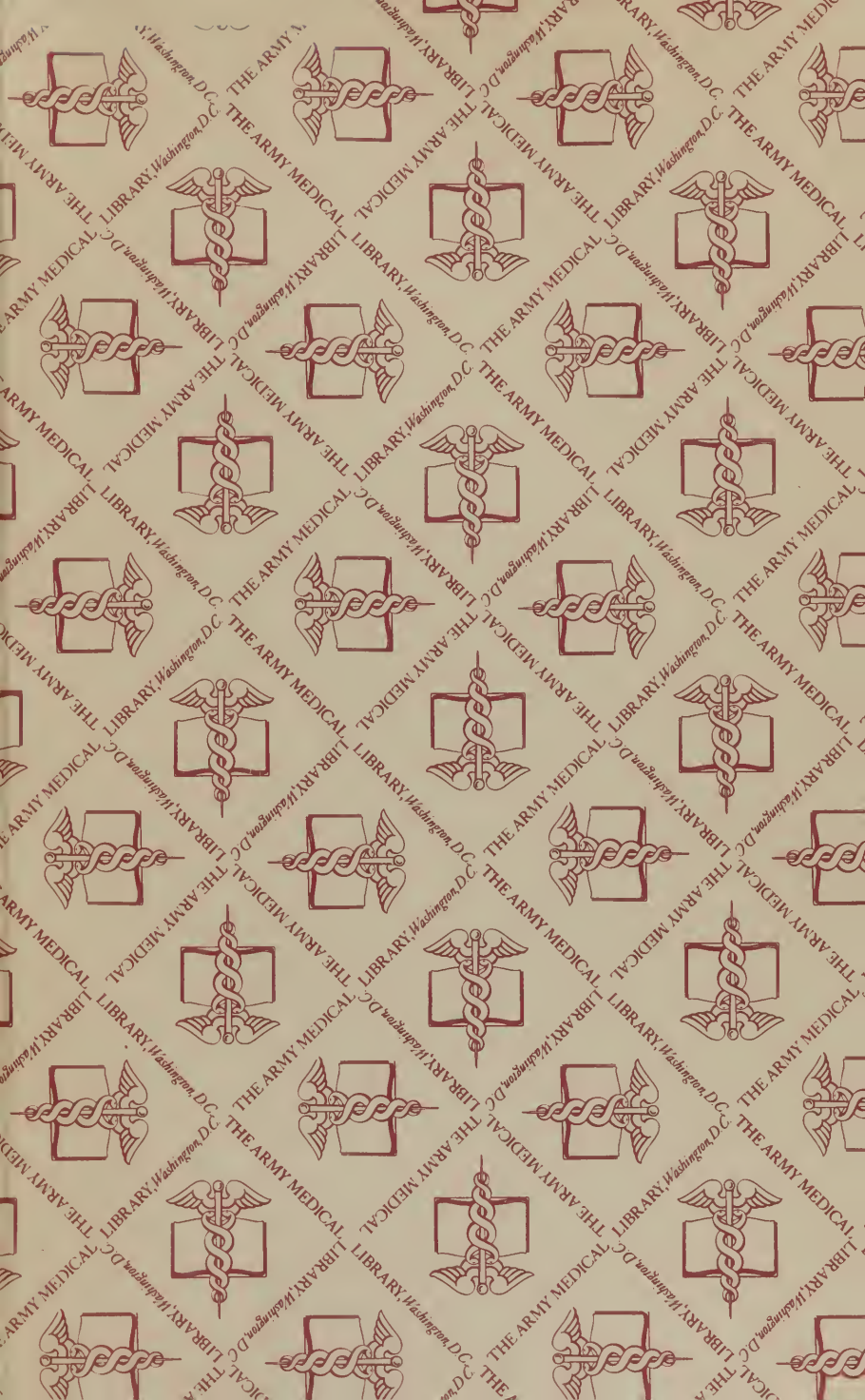


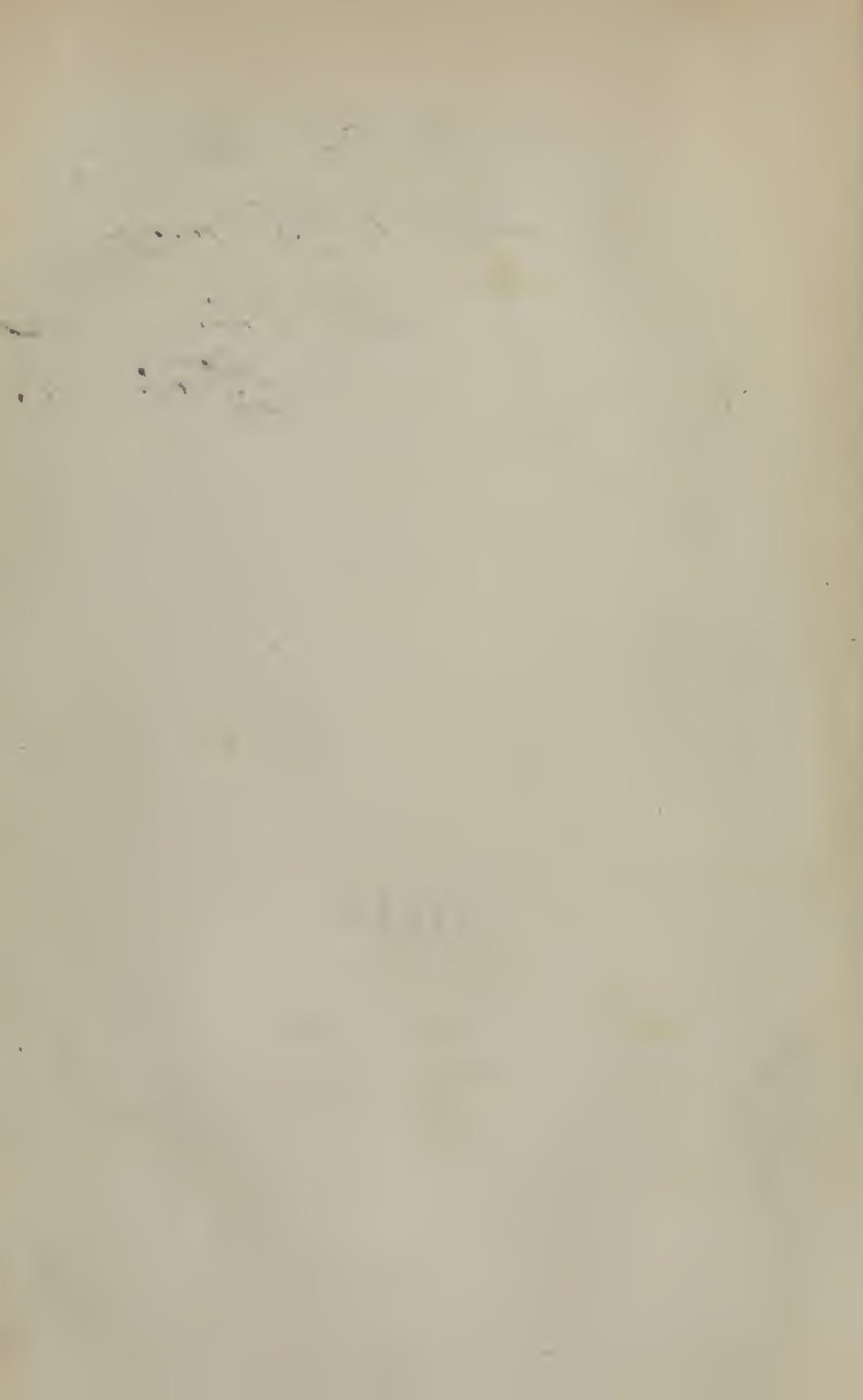
WP
B6216
1847





Dr. T. C. Dunn.

With kind regards of
S. Reid, Jr.



For title see next page.
BISCHOFF, T L G

TRACTS ON GENERATION;

TRANSLATED FROM THE GERMAN,

BY

C. R. GILMAN, M.D..

Professor of Obstetrics, &c, College of Physicians and Surgeons, New York.

AND

THEODORE TELLKAMPF, M.D..

Gebhard Professor, Columbia College.

25236
NEW YORK:

SAMUEL S. & WILLIAM WOOD,

261 PEARL STREET.

1847.

WP
B6216
1847

ENTERED according to act of Congress, in the year 1847, by
SAMUEL S. & WILLIAM WOOD,
in the Clerk's Office of the District Court of the Southern District of New York.

TRACTS ON GENERATION.

NUMBER I.

—
PROOFS

THAT THE PERIODIC MATURATION

AND

DISCHARGE OF OVA

ARE,

IN THE MAMMALIA AND THE HUMAN FEMALE,

INDEPENDENT OF COITION,

AS A FIRST CONDITION OF THEIR PROPAGATION.

BY

T. L. G. RISCHOFF, D.M.

Professor of Physiology, &c., Giessen.

Copy of a Letter from L. Agassiz to C. R. Gilman.

DEAR SIR:—

THE deep interest you take in Embryological investigations induces me to suggest to you the propriety of translating into English the pamphlet of Doctor Bischoff upon ovulation and fecundation of the Mammalia. Never were experiments upon this long vexed question conducted with more skill and success, to establish the facts beyond question, and never were the physiological views derived from them deduced with more accuracy and precision. *It is a model in this kind of experiments*, better adapted to vindicate the interest of the medical man for comparative embryology than any reasoning. I hope, by introducing this work of my learned friend before your physicians, it will become a link the more in the pleasant intercourse which already exists between the scientific men of the two countries, and start some of your young men in the line of original investigation in this important department.

Believe me always,

Dear sir, your devoted friend.

L. AGASSIZ.

New York, November 15th, 1847.

To Professor Gilman.

The letter of Agassiz, which accompanies this, will explain the reason why this translation was made, and commend it to

the notice of American physiologists more powerfully than any words of ours could do.

This tract is issued as No. One of "TRACTS ON GENERATION, *translated from the German*," and we desire, and design, if our publishers are encouraged to go on with the work, to follow this by translations of other of the more interesting Monographs on Generation, which have appeared in Germany during the last few years. Ovology and Embryology may, without exaggeration, be called *German Sciences*, and we cannot doubt that American physicians will be glad to possess, in their own language, the original researches of those who have taken the lead in these important subjects. In the series we propose, original researches only will have place, and when we say that in making our selections we shall have the aid of Agassiz, we give the strongest assurance that they will be judiciously made.

It is proper to state that a translation of the greater part of this tract appeared in detached portions in the London Medical Gazette of 1845-6. Of the existence of this translation we were not aware till ours was in progress, and we have not availed ourselves of it. In the measurements given in the text, where the inch and line are spoken of, the French are always intended.

C. R. GILMAN.

T. TELLKAMPF.

MATURATION AND DISCHARGE OF OVA

INDEPENDENT OF

COITION.

WHOEVER investigates the history of the theories of generation, must soon perceive that the cause of most errors in this department of human knowledge exists, and always has existed, in the fact, that in man and the Mammalia, to whose genesis most attention has been paid, the primitive formative material of the future being,—the ovum, and its pre-existence in the ovary, entirely independent of coition, was unknown. Hence a distinction, a hiatus, between man and the Mammalia on the one side, and all other known animals on the other.

This hiatus many have endeavored to fill up by theorizing, but the importance,—the necessity of exact examination and direct proof was then fully felt, when, wanting it, the greatest and most respectable authorities remained in doubt and error. There are, perhaps, few points which prove more strikingly the dependence of human knowledge on actual observation, than the one under consideration.

Philosophers, theologians, physicians, and naturalists, have, in all ages, been striving to overpass this one defect

in our actual knowledge, the existence of the Mammalian and the human ovule; but all their speculations and theories led only to darkness. The conviction became general among them that the Mammalia and man made a singular exception to the mode of generation of other animals, and to the conditions to which these were subject.

With other beings, plants as well as animals, a few only excepted, it was evident that their genesis was dependent on the fact that a parent organism produced certain materials (ova or semen) by the direct action of which, the one upon the other, the germ capable of development was produced. Further, the formation and the meeting together of these two generative materials (both essential to the continuance of the species) was nevertheless clearly by no agency of their own, and their mutual relations were often under the influence of many accidental circumstances.

The ova were formed, matured, and usually discharged by the female organism, at certain regular intervals, quite independent of the formation and maturation of the semen of the male, which likewise took place either periodically or continually.

By an accessory and extraordinary combination of external circumstances, which are either absolutely external and quite accidental, or in the exercise of certain other functions which are developed at the same time, these two materials are brought into contact, and thereby

germs are rendered capable of development. If these relations are not established, or if they are disturbed, the generative materials nevertheless ripen to a certain degree, and are excreted, but no germs capable of development result. Examples from the vegetable and the portion of the animal kingdom below the Mammalia, as in fish, amphibia, and birds, are too familiarly known to require a particular notice. With the Mammalia and man, on the other hand, the matter was believed to take quite a different shape. With them the formation of a germ was generally considered as the result of coition. This function with them had the object not only to render the female germinative material capable of development, but to produce it. These opinions had their principal basis in the insufficient knowledge (the ignorance indeed) of the pre-existence of the female germinative material, of the ovule to coition.

In 1827, after centuries of discussion, Von Baer discovered the ovarian ovule in the mammalia and in the human female, and at the same time found in its unexpected smallness the reason why it had so long remained unknown.

I have always wondered that this discovery did not produce a greater and more general sensation, referring as it did to a matter which had interested, in so extraordinary a degree, man in all ages. It was partially recognised, partially denied, partially neglected, and only the embryologists in the most restricted meaning of the

word, concerned themselves with it, and they indeed only in its relations to the development of the embryo, and not in its bearings upon the theory of generation generally. This theory had too often been built on supposed ova, and was too deeply rooted, not to supply for some time the want of actual observation, whether it was in harmony with the facts of the case or not. After the actual state of things had become known, and when the pre-existence of the ovule before and independent of all coition was proven, theorists still adhered to the opinion that coition was the only and essential condition upon which the maturation and discharge of an ovum from the ovary depended. And all other parts of the process were considered (though they clearly pointed to the contrary) only from this point of view.

I was myself under the influence of this theory to such a degree that I was led by it blindly in my former investigations on the development of the Mammalia.

These investigations referred particularly to the development of the fecundated ovum; but, nevertheless, the process of fecundation was an essential object, and (while I made use of the then existing knowledge of the ovule) I succeeded so far as to rectify and to clear up several points which had remained unsettled with my predecessors. But I was always governed by the opinion that the discharge of the ovule from the ovary, the first essential condition of development, had some necessary connexion with coition.

Like all my predecessors, I tried to discover at what time after coition the ovule was discharged from the ovary in different animals, and what part the semen took in this discharge. I was so fortunate here as to determine several of the most important questions. 1st. I furnished direct proof that the male semen comes in material—actual contact with the ovum, and found by unquestionable observation that the semen penetrates through the uterus and the tubes to, and is found upon, the ovary.

According to the old doctrine, I established the following conclusion; that the fecundation of the ovum takes place on the ovary at different periods after coition in different animals, during which periods, the semen penetrates to the ovary, and the ova are discharged from it. By continued observation and experiments I have now arrived at the conviction, that, though the facts upon which I founded this result are now, as before, perfectly correct, yet the result by no means comprises the law of generation of the Mammalia and of man, but that this law comprehends more, and is in perfect accordance with that which governs generation in all organic beings.

This law may be thus stated:

In the Mammalia, including the human species, the ova in the ovary advance through regular stages of development to maturity, quite independent of any agency of the male semen.

At a time which, in the lower animals, is called the

period of heat, in the human species that of menstruation, these ripened ova are detached and discharged from the ovary.

At this time only is the sexual appetite manifested by the lower animals, and in the human female it is then strongest.

If coition then take place, the fecundation of the ovum results from the direct effect of the male semen upon it.

If coition does not then take place, the ovum is loosened nevertheless from the ovary, and enters the tubes, but here perishes. The relations of time may vary, as it appears, in different animals, according to different but still defined limits. The semen may have sufficient time to reach the ovary before the ovum is discharged; the ovum may also have already been discharged, and the semen may meet it in the tubes; but the effect of the semen upon it must always take place in the tubes, or it cannot be developed, the process beginning there.

Only at the time of the periodic maturation of the ova can coition result in fecundation.

I do not consider it necessary to give proofs of all the particulars embraced in this law, as several of them are recognised and admitted truths. I shall particularly confine myself for the present, first, to the proof that in the mammalia at the time of heat ova are discharged from the ovary, and enter the Fallopian tubes, whether coition

take place or not, and whether by its instrumentality the semen be brought in contact with them or not. Previously, however, I will make the following observations :

The changes of the female sexual organs in the Mammalia at the time of heat, which prove a periodic increased activity there at that time, have been partly known for a long time ; but I will mention, in addition, that Barry and myself have made known changes in the ovum, which are perceptible at this time, and which therefore may be considered as symptoms of its maturity.

These changes relate particularly to the size of the ovule. The maturest ova are always the largest. Nevertheless, the law which Von Baer and Valentin have announced, and I have confirmed, respecting the individual parts of the ovum and the Graafian vesicle, remains unchanged, viz. that the contained parts in their relations to the containing are so much the smaller as these parts are more mature. The yolk is in mature eggs the fullest and most dense, and contains the most yolk elements. The number of the large fat cells which are contained in it, which varies in different animals, appears to decrease, and on the other hand the number of small yolk granules to increase as it is more mature. The Germinal Vesicle which is found in immature ova, towards the centre of the yolk, is visible in the mature,

quite at the periphery, and is here sometimes observed, in a curve in the disk of the yolk ; this I have seen in dogs.

In quite mature ova it may even be wanting, and, according to some observations made on dogs, it is possible that the disappearance of the germinative dots (the nucleii of the germinative vesicle), preceding that of the latter, denotes the perfect maturation of the ovum.

The change of the cells of the so called *discus prolifersus* around the zona, which begin to elongate themselves into fibres, and, adhering to the zona, give to the whole ovum an extended or radiated appearance, are the most striking and most easily recognised, and are besides the surest indices of the complete maturity of the ovum, at least in dogs and rabbits.

In dogs, finally, I can assert positively that the formation of the corpus tectum, as a granular growth, begins from the inner surface of the Graafian vesicle, even before it ruptures, and before the ovule is discharged from it, and may, therefore, be also considered as an indication of its full maturation. These statements will, I hope, assist others when desirous to determine whether, in any case, the ova before them are maturing or mature or not. That it is not the effect of the male semen which produces the discharge of the mature ova from the ovary was just proven to me when repeating the experiments made by Nuck, Hæghler, Cruikshank, Grassmeyer, Blundell, and Hausmann.

The results obtained by these observers it may not be unnecessary to introduce, and critically to examine. Nuck (*Adenographia Curiosa*, p. 69, *Opp. omn.*, Lugd. Bat., 1773) tied the left horn of the uterus of a dog three days after coition, and found, twenty-one days later, two ova in a state of development in the part of the uterus above the ligature. Beneath none. Though this result is rendered very doubtful by his adding, *fœtus jam consumptos et in materiam pene purulentam conversos fuisse*. Moreover, though it is certain that on the twenty-first day after a coition the embryo of the dog is yet hardly formed in its first rudiments, yet the observation is, nevertheless, if received as correct, not at all to be wondered at. The semen in the dog penetrates during the coition immediately to the apex of the uterus: on the third day afterwards it has for some time entered the tubes, the ova also are already discharged from the ovary and fecundated. The ligature around the uterus could therefore only prevent the descent of the ova beyond it, all the rest is easily explained.

Haighton (Reils Arch., iii., p. 46) cut, in many rabbits, the tubes, with or without loss of substance; sometimes on both sides, sometimes only on one. In by far the majority of cases, he observed, afterwards, a total loss of sexual instinct. Probably because the blood-vessels of the ovaries were divided, and thus the maturation and development of ova, and of course the heat and the sexual instinct prevented. If with some coition was allowed,

it is stated to have been without effect, and the ovaries were said to be in a state of degeneration.

But in three rabbits in which he had cut the tube on one side only, coition was admitted and conception resulted.

On both ovaries corpora lutea were visible, but the developed ova only on that side which remained intact.

He argues from these experiments that the ovaries could be affected by the irritation of fecundation, without contact with the semen, while he should have contented himself with saying that the ova are discharged from the ovary even when the semen cannot reach it.

In a rabbit in which he had, six hours after coition, divided the tube on one side, he found afterwards corpora lutea on both, ova only on the intact side. This also is easily explained, and even in two modes. 1st. Barry and myself have seen, nine or ten hours after coition, the semen *on the ovary* in rabbits; after six hours, therefore, it may have passed the place where the ligature was applied. The ova could, therefore, have been fecundated, and tubal pregnancy might have resulted. But if we do not admit this, then, 2d, The mature ova were discharged upon that side on which the semen could not reach them, and perished unfecundated, while corpora lutea are formed as well on this as on the other side.

The experiments made by Grassmeyer (*de fecundat.*

et concept. humana des., Gotting., 1789, p. 48) are little reliable, and nothing can be derived from them.

He tied the tube or the uterus of fourteen rabbits, after which simple operation only two remained alive, showing that the operation was performed badly. One of these survivors, the tube of which he had tied, was pregnant during the operation, and abortion followed. Four days afterwards, desire for copulation manifested itself strongly, and coition was completed. When he killed the animal, fourteen days later, he found the horns of the uterus somewhat swollen in some places, but no ovum or embryo, and nothing remarkable on the ovaries; in the abdominal cavity hydatids, which he considered as something very remarkable, though Blumenbach pointed them out to him as such.

The tube was also tied in the second rabbit; twenty-one days afterwards *it is said* to have *admitted the male*, though Grassmeyer did not see it, and nine days later he found neither on the ovaries nor in the uterus, any change.

Cruickshank also made experiments on this subject which had no result. He tied in a rabbit, one day after coition, the left tube close to the uterus. After fourteen days he found the uterus on the right side empty, though the placenta was visible, and was retrogressive, as was the ovary. On the left side no sign of fecundation in the uterus, no placenta, the end of the tube very wide and easily torn, the ovary twice as large as that of the other side, red, and covered with coagulable lymph. In

the tube a hydatid containing a clear fluid was found, but no indication of an embryo. Traces of peritonitis were wide spread, and some exudation into the abdominal cavity.

According to my experience, in twenty-four hours fecundation and the discharge of the ovum from the ovary ought to have taken place. But it appears that the operation produced violent inflammation, and that the ova, as well on the left as on the right side, perished in consequence, though they were rather more developed on the latter. *Phil. Trans.*, 1797, p. 1, Exp. 11 and 16.

Blundell (*Medico. Chir. Trans.*, 1819, vol. 10, p. 264. See also *Prin. and Prac. Obstetr.*, London, 1824, p. 60), after having divided one horn of the uterus in rabbits before coition, found ova only in the uninjured horn, but corpora lutea on both, which, moreover, could not be distinguished the one from the other. After dividing the vagina, he found no ova in the uterus, but yet corpora lutea in the ovaries. He also observed after the operation an insatiable desire for coition.

Finally Hausmann (*Über de Zeugung des Wahren Weiblichen Eies*, p. 93), in his fifty-third experiment on a sow in whom he had removed the fimbriæ from off the ovaries, saw no fecundation, but yet the development of corpora lutea followed. A second experiment (his fifty-fourth), when the fimbriæ were removed only from off one ovary, is unreliable.

My own experiments made on this subject are as follows :

January 29, 1842, half past 8 A.M. I had one rabbit covered by the male, spermatozoa were found in great numbers on the vagina. Half past 2 P.M. (six hours) I extirpated the right ovary and tube ; in doing this I found that this rabbit was one of a number from whom I had extirpated the uterus the preceding summer. The ovary and tube, however, manifested all the signs of heat, the blood vessels were turgid, the Graafian Vesicles large, the Epithelium of the tubes shining from the vibration of Cilia,—of course no spermatozoa were found in the tube. I then examined the four largest Graafian Vesicles, they were unruptured, and an ovule existed in each. The cells of the Membrana Granulosa were highly developed, and those of the discus prolonged into fibres, as I have always observed them in ova ready for fecundation. The vitellus of one ovum had a spotted appearance ; the others not. The Germinative Vesicle I could not discover in either of the four, though I took all possible care. The ovum of the largest Graafian Vesicle had a diameter within the disk, of 0.01, within the zona 0.006. In the yolk 0.0045, the zona itself 0.0006 inch. At half past 6 P.M., ten hours after coition, at which time the ova in other cases had generally separated from the ovary, I killed the rabbit. On the left side also the uterus had been extirpated, and the tube adhered to the ovary ; on this latter, nevertheless, several

Graafian Vesicles were very much enlarged, they still containing ovules, and in these, the cells of the disk exhibited, even now, their spiral metamorphosis. The yolk presented dark spots, which were not produced by any peculiar formation of cells; it appeared to me rather as if the vitellus was undergoing a retrogressive metamorphosis, which, perhaps, was occasioned by the state of the whole ovary, for other Graafian Vesicles, which were not much enlarged, contained such ova, with the dark-spotted vitellus; the cells of the membrana granulosa as well as those of the disk, were transformed into dark granules.

In the ova of this side I found no germinative vesicle. Corpora lutea were not found in either of the ovaries.

On the 22d April, 1841, I divided both uteruses (leaving behind the ovaries and the tubes) of a rabbit pregnant for eight days; the animal soon recovered completely, and I put it to the male on the 22d June. The sexual appetite of the female was so great that she not only allowed herself to be covered immediately, but while the male was resting, she mounted other females until the male covered her again. Four days later I killed her; I found on the left ovary three, and on the right five recent corpora lutea, and besides, one Graafian Vesicle filled with dark coagulated blood. Content with this result, I unfortunately examined only the tubes as to whether the Cilia werè still in motion. They were so, actively. In the summer of 1841 I had extirpated the

right uterus, leaving behind the tube and ovary in another rabbit. This animal appeared some time afterwards to be strongly in heat, chased the other females, with which it was kept, mounted them, and went through the motions of coition. Nevertheless, though I put it often to the male, it would not permit him to cover, neither on the 15th nor 16th May. I had entirely forgotten the former operation performed upon it. I left it unobserved with a male from the 17th to the 21st May, and made use of it on the latter day for another experiment. To my surprise I found traces of the former operation, and besides that it had been covered. In the upper part of the left uterus was found an ovum, which was noticeable from its slightly swollen and transparent condition. It was as far developed as the ova of rabbits usually are about the ninth day,—the ovary contained a corpus luteum. The right uterus was wanting, and the lower end of the tube was attached to the lower end of the extirpated uterus; both were impervious; between them a thick cheese-like mass existed, which showed under the microscope pus globules; in this mass the ligatures that had been used were found inclosed. The ovary contained four corpora lutea as much developed as those on the left side.

I determined to examine the tube, and found, quite unexpectedly, four ova in the middle of it; they had evidently been somewhat developed, had then become stationary, and were now about to decay; the discus

proligerus had disappeared, and in its stead a small layer of albumen was formed around the zone ; this latter was somewhat swollen, the yolk did not fill the zone completely, and showed manifest signs of resorption. It was irregular, very pale, granular, and small. In one ovum darker yolk granules could be distinguished.

On the 19th and 20th of January, 1843, I cut, at four different times, from the uterus of a bitch, which had been covered three weeks before, pieces from both uteri, which contained five ova. The bitch bore the operation very well, and as I had the intention to let her live, I left the ligatures of which I had made use, out at the external wound, which I closed by the suture. She soon recovered perfectly, the ligatures came away, and the external wound healed. I then took the animal into my house and she became remarkably active, even playful, stout, and fat. The sensibility of the abdomen to pressure disappeared, and soon not the slightest indication of any injury was perceptible. Sunday, May 14th, same year, I first noticed that the dogs began to follow her ; she drove them away playfully, and remained very lively, until Wednesday, when the external genitals were much swollen, and discharged blood freely ; on this day the animal became sad and did not eat, but on the following day she was again very lively, and the dogs followed her in still greater numbers. She, however, did not admit them until the 20th, when a dog covered her in my presence, and remained upon her for three-fourths

of an hour; from this time she allowed herself to be covered by different dogs during the whole of the following week, until Sunday, 28th. On Monday, 29th, she again admitted a dog, but he did not succeed in covering her. I was doubtful as to the time at which to examine her. I was convinced that the ova were detached from the ovaries, and had entered the tubes. I expected, further, that they would perish there, and I wished to wait until the division of the yolk would, in regular course, have begun, in order to see whether, perhaps, an indication of that division would be manifest, as is often the case in the unfecundated ova of fishes. The reason I allowed this bitch to live so long was that the division begins only in the lower portion of the tube, and the bitch generally allows herself to be covered until the ova are about to enter the uterus. But as the desire had already lasted eight days I feared for the ova, and had the animal killed on Monday, at 10 o'clock. Opening the abdominal cavity the traces of the former excision of the uterus werẽ but inconsiderable—the bladder adhered in front, by a kind of mesentery to the cicatrix on the abdominal wall, all the other organs were free from such adhesions: the omentum was completely adherent to the residue of the uterus and its mesentery, as well as to the ovary, and it completely enveloped the whole intestinal canal, but in a peculiar manner; for the canal was everywhere freely movable. As to the genitals, the

vagina, os tincae, and body of the uterus were entirely normal.

On the right side there was an adhesion of the left uterus to the right body half an inch in length; both were equally in a normal condition.

On both sides these portions of the horns of the uterus were in their upper parts completely impervious; on the right side followed a callous portion of cicatrix two lines long, by which the uppermost piece, more than one inch long, of this right horn of the uterus, was connected with its ovary and tube. These all had a normal appearance, and had no other adhesions. On the left side a larger portion of the substance of the cicatrix was next to the lower portion of the left uterus; here was found the most complete adhesion with the omentum. Next to it was the superior portion of this left horn, with ovary and tube; the former, however, was somewhat distended and fluctuated, evidently containing pus, as was found by examination. The ovary and tube were in every respect normal.

I examined first for the semen, and found spermatozoa, though only a few, in the body and the lower portions of both horns of the uterus. They were motionless, and this, as well as the smallness of their number, surprised me somewhat, as the bitch had been covered as late as on the previous day. In the upper portion of the right uterus I did not find the least indication of spermatozoa

on making the most careful examination. On the left side the pus rendered the examination impossible and unnecessary. The right ovary exhibited two, the left four, fresh and large corpora lutea, completely developed: they were in no respect different from other corpora lutea of other bitches, on the eighth day after coition. They were quite as large, quite as vascular, and of the same flesh color, had the same structure, a radiated texture in their interior, and had each a narrow, central cavity, filled with a transparent gelatinous mass: their surface was even, and only one had a sort of opening; this is rarely met with in bitches on the eighth day, in most cases it is already closed, without leaving even a trace behind. Finally, both ovaries showed quite distinctly the five corpora lutea of the last fecundation, in January, as lenticular yellow masses.

I now searched most carefully in both tubes and in the right cornu of the uterus for the ova, but I could find none. I do not believe that I could have overlooked them even had they already changed very materially their appearance, but rather I am convinced from the condition of the corpora lutea, and from my experience with rabbits, that the ova had been already discharged from the ovary, entered the tube, and perhaps already the uterus, but that they had there decayed, as not being fecundated. I ought to have made this examination earlier, on the 3d or 4th, rather than on the ninth day.

On the 14th August, 1842, I opened the abdomen of

a bitch, believing her to be pregnant, but found it was not the case. I put a strong ligature around the left uterus, about its middle; cutting it off short and allowing the knot to remain, I preserved the animal. Monday, January 4th, 1843, this bitch was again in heat, and was covered at 9 A.M. and on the following day by two dogs. On Friday, January 13th, I ordered her to be killed. In the middle of the left uterus, at the place where the ligature had been applied, a swelling the size of a walnut was found, to which the omentum closely adhered; above this a small portion of the uterus had its normal diameter; further up, however, it was distended by pus, forming a fluctuating elastic sac, as large as a hen's egg; into this the tube opened. The right ovary contained three corpora lutea, the left four, as completely developed as the other. I then examined, first the right uterus, and found the three ova, one about the middle, a second about an inch from it, the third high up in the apex; they were just in the state in which the blastoderma begins to be formed by the yolk globules, which I shall describe more minutely elsewhere. On the right side I examined the tube most carefully without finding any ova. They certainly had been discharged, as was proved by the four corpora lutea, and I believe they had passed through the tube and entered the sac-like distension of the uterus. This was filled with a very offensive green pus, which was also found in the enlarged portion near the ligature, and of course any search for ova was futile.

Now, I believe that these experiments of my predecessors and myself prove, in the most incontestible manner, that even though the progress of the male semen in the tubes to the ovaries, and consequently its action on the ova, is prevented, yet at the time of heat, though in these cases after coition, all the changes, as well in the ovary as in the ova, are developed as in the normal state, the ova mature, the Graafian Vesicles swell and burst, corpora lutea are formed, the ova are detached, and pass into the tubes, there is even some appearance of further development; but, as the action of the male semen upon them is prevented, this development does not progress, they retrograde, are dissolved and discharged. This last circumstance proves that the whole series of changes are altogether independent of coition, and are only subject to their own law of development. An *aura seminalis*, an absorption of the semen, or that still more mystical effect of coition, which former observers declared to be proven by these same appearances, are altogether out of the question, since I have proved actual contact of the semen and ova. In these cases all these opinions are disproven by the fact, that the ova are incapable of development and decay, if this actual contact be prevented. If the semen in coition had caused, in these cases, the discharge of the ova, the development of the corpora lutea, &c., then the ova would have been fecundated, and would have been further developed. I therefore believe that in spite of the concurrence of coition, the

independent mode of development of these ova is proved by these experiments.

Another observation which I was so fortunate as to make shows this independence of coition still more decidedly.

With the intention of ascertaining to what point the male semen penetrates in bitches at the time of coition, I had kept a strong, healthy young bitch, which had never been covered. Since all depended upon my knowing, with absolute certainty, the time of the first coition, I kept her in my own house and watched her carefully. In the beginning of June, 1843, I observed that she was near the time of heat, the dogs began to follow her eagerly, and blood was discharged from the vagina; on Friday, June 9th, she did not allow herself to be covered. I then chained her up and isolated her strictly till the 11th, at three-quarters past one, when I put a dog to her, and she was covered for the first time. That this was a first coition was evident by her resistance and cries. As soon as the coition was over, I extirpated the left uterus, ovary, and tube, and closed the wound by suture. I first examined the uterus, and found it quite full of spermatozoa in active motion. I intended next to examine the tube to find whether the semen had penetrated into it, but while preparing it, on laying bare the ovaries, I saw to my astonishment, that the ova which I had certainly expected to find in the Graafian Vesicle, had been already discharged from the ovary, for there

were five small openings on the ovary, from one of which a little red mass projected; five Graafian Vesicles had, therefore, already burst. The formation of the corpora lutea had even made some progress, commencing at the base and on the walls of the follicles; they even presented a considerable cavity filled with limpid serum, in which, however, no ovum was contained. It was now apparent to me how such a state of things had possibly led former observers, who were ignorant of the ovule, to the belief that the follicles were not yet opened. I gained at once the full conviction that they had opened, by finding the five ova near each other in the tube, about two inches from the fimbriæ. Nothing new resulted from their investigation; they had, in every respect, the characteristics which I had already seen in ova at this period of their development, and were entirely identical with the perfectly mature ovarian ovule. I looked in vain throughout the whole tube up to its uterine orifice, for spermatozoa; nowhere was a single one to be seen, and I spent so much time and care in this search, that I venture to assert most positively that the semen had not yet entered the tube. Next morning, at 10 o'clock, twenty hours later (within which time I had, in my former observations, usually found that the semen reached the ovary), I ordered this bitch to be killed. The right ovary showed five small openings, and five corpora lutea further developed, and in addition quite a large Graafian Vesicle, not yet ruptured; the tube contained five ova, which

had progressed beyond its middle, and were several lines apart. Three of them were quite normal in their condition, and similar to those of yesterday, but two were plainly abnormal and abortive, the zona indistinct, the discus proligerus incompletely developed, the vitellus a small irregular mass of yolk granules. I now found spermatozoa in the tube, partly in motion, partly not they had, however, penetrated not more than three lines beyond the uterine orifice. The whole remaining portion of the tube contained none, nor was there any vestige of them upon or around the ova; *the ova had evidently not been fecundated.*

I believe that this observation incontestibly proves, that the ova, when matured, leave the ovary and penetrate the tube, without any influence of the coitus. That it had not taken place before the time when I observed it, may be considered as certain, in view of the great care that had been taken; that the ova had been discharged by any influence of the coitus cannot for a moment be admitted, because,

1st. It is certain that coition does not always produce this effect, as I myself have found that after coition had been frequently repeated, the Graafian Vesicles were still closed, and,

2d. As it cannot be imagined that the ova had, in the short space of a quarter of an hour, passed over two inches of the narrow Fallopian tube, since it requires, as we know, eight days to pass the other two or three

inches. If, therefore, quite independently of coition, the ova actually leave the ovary, and pass, unfecundated, into the tube, and may remain unfecundated after a period of twenty hours—we are first to inquire how this agrees with my former observations, in which I found in bitches six, eighteen, or twenty hours after the first coition, the Graafian Vesicles still closed, and the semen then penetrated through the whole extent of the tube, and even upon the ovary? The answer of these inquiries evidently is, that when the ova are mature, fecundation is possible within certain limits of time and space. It depends, as it appears, on the peculiarities of the animal, and on the occurrence of opportunity, whether coition is consummated while the ova are still in the ovary or not till they are already detached and have entered the tube. Were animals placed in perfectly natural circumstances, and opportunity offered for coition, it appears probable that the sexual instinct would exhibit itself before the ova were discharged. If coition be at that time consummated, the semen may penetrate through the tubes to the ovary, and this, as my former observations have shown, may take place in twenty hours. Other bitches admit the dog later, or, perhaps, opportunity is wanting, the animal being, as in the case above detailed, locked up,—then the ova are none the less detached, and may even after that, if coition take place, be fecundated: how long this is possible, I cannot say with certainty; but as bitches generally admit the male for the

space of eight days, and as the first manifestations of development in the ovum, the division of the yolk, begins in the lower portion of the tube, where they are met with about the seventh or eighth day, it appears that this is the limit within which fecundation of the ovum is possible in the bitch.

After I had gained an insight into these phenomena, many of the results of my former experiments, which I had then considered as futile, or had differently interpreted, again engaged my attention. I had been, as I have mentioned, under the erroneous impression that coition, was the cause of the discharge of the ovum from the ovary. I therefore counted always, as all my predecessors had done, from the first coition; it accidentally so happened that most of the bitches which were used for these observations were, probably, covered before the ova were discharged. Still, I find among my previous observations, several in which I had at the time noted that though the ova were found in the upper third of the tube, I saw spermatozoa only in its lower portion. As I, however, then knew that they did penetrate through the whole length of the tube, I supposed that I had overlooked them in the upper portions, perhaps because their number had been small, or that I had not been sufficiently careful in my experiments. I am now convinced that these were cases in which the ova had been discharged before coition had taken place, and the semen had time to penetrate further in the tubes. In bitches I

had only seen spermatozoa *uniformly on the ova* in the lower third of the tube, rarely in the upper portions.

In rabbits, where the period of heat cannot be as accurately ascertained as in bitches, and where the male generally improves the first opportunity for coition which the female will afford, it appears that the ova are not usually discharged till the semen has time to reach the ovary, this requiring, according to the observations of Barry and myself, nine or ten hours. In rabbits I have always found spermatozoa on the ova in the upper third of the tube; and with them the division of the yolk begins higher up in the tube, and the limits within which fecundation is possible are probably much shorter than in the bitch.

From all this it results that the usual mode of calculating the discharge of the ova, from the first coition, is uncertain, or at least only approximatively accurate. If, then, it is certain that the ova may leave the ovary and enter into the tube before coition, then, I think, it admits of no doubt that this also happens if coition does not take place at all, though of course the ova then perish.

In former works on the subject, few statements are found which can be quoted here, and these refer only to the Graafian Vesicle and the corpora lutea. Kuhlemann (*Observat. Quæd. circa Negot. Generationis*, p. 15, *Epi-crisis*) states that in the ewe when in heat and when not covered, or at any rate not fecundated, no Graafian Vesicle bursts, and no corpus luteum is formed, or, at

least, such formation, in his opinion, *only happens as an exception*. Some experiments of Hausemann have, unfortunately, not the authenticity which they would have had if that author had not neglected and indeed denied the existence of the ovarian ovule.

A bitch was in heat from October 29th to November 4th, but coition was prevented. On the ovaries when the animal was killed, there were "*Graafian Vesicles which had the appearance of corpora lutea, but were not ruptured, containing limpid fluid, but no ovum*" (*l. c.*, p. 73, *Exp.* 25). In another experiment (41st, p. 87), a sow was in heat, June 23d, but was not covered: on the 9th July she was again in heat, and would on the 11th have admitted the boar if it had not been prevented: on the 12th coition took place, and twenty minutes after, the sow was opened.

On the left ovary five mature, unruptured Graafian Vesicles, and six corpora lutea were found—on the right, five mature vesicles and three corpora lutea. Hausmann thinks that these corpora lutea were the result of the heat of the 23d June.

In regard to sheep, Hausmann says (*l. c.*, p. 94), "if the ewe is not fecundated, no Graafian Vesicle ruptures. *It appears, however, that a Graafian Vesicle ruptures after the animal has been frequently in heat without being covered, then only an imperfectly developed corpus luteum is formed.*" In *Exp.* 56, p. 95, he found one such in an ewe near the corpus luteum of the left ovary, which

dated from the last period of heat and fecundation, and such an one also on the right, but less developed; this he considered as proving "*that a Graafian Vesicle might at times rupture without coition.*" In *Exp.* 58, p. 96, it is further stated that near one Graafian Vesicle ruptured in consequence of coition, a corpus luteum was found on the ovary, *though the ewe had not been covered, but had been several times in heat.*"

I myself have made upon this subject the following observations :

December 7th, 1843, 4 o'clock P.M., I received a young ewe in which the first indications of heat had manifested themselves within an hour. It had not been covered. I had it immediately shut up. On the following morning, at 10 o'clock, I admitted the ram, who immediately attempted to cover, but was prevented. As, according to Kuhlemann (*l. c.*, p. 13, *note*), the ewe is only in heat for twenty-four hours, and as Kuhlemann and Hausmann profess to have found the Graafian Vesicle open twelve hours after coition, and Von Baer says he has seen the ovum of an ewe in the tube before the end of the first day, I concluded that the ovum would probably, within the first twenty-four hours of heat, be discharged from the ovary, and therefore ordered the animal to be killed between three and four o'clock in the afternoon. On this occasion I remarked, to my great satisfaction, that a Graafian Vesicle was ruptured on the right ovary. The spot was not elevated above the surface of the ovary,

but could be distinguished by a circle of small blood-vessels of bright red color surrounding a minute opening ; this appearance was already familiar to me in dogs and rabbits, but it might easily be overlooked, and certainly often has been by those not familiar with investigations of this description. This small opening had a diameter of about $\frac{2}{3}$ lin. I examined afterwards the vagina and the whole uterus very minutely for spermatozoa, in order to gain this negative evidence that no coition had taken place. I found no signs of them, as it had been rendered positively impossible. The following morning I looked for the ovum. I placed the tube on a plate of glass, spread the fimbriæ of the infundibulum very carefully, and examined them first with the simple microscope ; I found nothing ; but I remarked a thread of mucus which could be traced into the infundibulum, and the elements of that thread appeared to me to be very similar to the detached cells of the Membrana Granulosa of the Graafian Vesicle. I now cut, with a fine pair of scissors, the upper third of the tube, separated the divided edges, and examined each small fold carefully with the glass and a fine needle ; here I was so fortunate as to find the ovule, five lines from the entrance of the tube. I regard this as a *fortunate accident*, in spite of my familiarity with the object I sought ; for the observation is so difficult that one need not wonder if nine times in ten it fail.

This ovum from the Fallopian tube had, under the microscope, exactly the appearance of an ovarian ovule.

The zona was still surrounded by the cells of the disk, not yet drawn out into fibres, although obviously beginning to be melted together.

The ovule with its disk had a diameter of 0.0079 inch= $\frac{1}{11}$ P. line, or $\frac{1}{50}$ millimeter. The yolk, as a small, finely granular dark mass, filled entirely the cavity of the zona. After I had removed with a fine needle the cells of the disk from the zona, I measured the diameter of the ovum within the zone: 0.0054 inch= $\frac{1}{18}$ line= $\frac{7}{50}$ mill. The zone itself was 0.0006 P. inch= $\frac{1}{13}$ P. line= $\frac{1}{50}$ mill. in thickness; the germinal vesicle I could not see through the yolk, though this is usually possible in the ovary of the ewe. After the ovule had for a time remained in a weak solution of common salt and albumen, there were developed upon it many curious metamorphoses, which I will now describe.

There appeared at first an endosmose into the zona, by which it was enlarged, and the ovum took a somewhat elliptical form, so that after a time it measured in its larger diameter 0.0071 inch= $\frac{1}{12}$ line= $\frac{19}{100}$ mill.; in its smaller 0.0060 inch= $\frac{1}{13}$ line= $\frac{8}{50}$ mill.

As a further consequence of this, the yolk no longer completely filled the cavity of the zona, but had apparently receded from the inner surface. In the space thus left between it and the zona, now appeared a small vesicle or grain strongly refracting the light, somewhat yellowish and shining, in size 0.0005 inch= $\frac{1}{17}$ line= $\frac{1}{77}$ mill., precisely similar to those which I have seen and described in

the ovum of the rabbit and of the bitch, in the upper third of the tube near the yolk, which no longer filled up the zona. I have ventured to conjecture that this little body may have been the dot of the already ruptured or dissolved Germinal Vesicle, and I confess that I am confirmed in this belief, by the present observation, as here the vesicle, which was at first very apparent, had in a short time entirely disappeared.

The yolk of this ovum, when I had removed the zona, presented the most deceptive appearance of a peculiar investing membrane which I have yet seen. I remember that many observers (for example Professor Bruns) have asserted, that this peculiar yolk membrane did certainly exist in the ovum of the ewe. The yolk has certainly a very sharp margin, which in certain portions of the microscope appears as a dark line, formed by a membrane. Indeed it seems as though a space existed between this line and the granular mass of the yolk. I am nevertheless still convinced, that the yolk has no other peculiar yolk membrane than the zona, and that it is only in a mass of gelatin or albumen, that the yolk granules are suspended and distributed; but the more sparsely these granules are scattered through this connecting material, the less thick and dark is the yolk; this is the case in the ovum of the ewe. The surface, and also the margin of this vitelline ball, is made up almost entirely of this connecting material, and presents therefore a very sharp outline, which appears to arise from a fine transparent membrane.

That this is so we may learn,

1st, from careful observations with a good microscope, that is to say, an Oberhauser, for they alone will give this outline sharp enough. With this, by altering the focus slightly, one may easily convince himself by actual observation that the thing really is as I have described it.

2d. I have seen in long continued observations that the yolk, manifestly, though gradually, absorbed the fluid contained in the zona. Here and there the yolk would rise up and the sharp contour be lost, while the zona remained perfect in other places; now it would be impossible for this to result from the rupture of a delicate membrane.

3d. After I have broken the ovum with a compressor, some single fragments of the yolk have still showed the sharp outline; this could not arise from any investing membrane. Finally,

4th. The little grain near the yolk proves that this can have no proper investing membrane, for this was earlier seen in the yolk, enclosed near its upper surface, yet was it afterwards free in the space between the yolk and the zona; an investing membrane of the yolk would have prevented this. I lay great stress on this point, because the question of the existence of a proper yolk membrane is decisive in the further development of the ovum. As I am induced by continued investigations to deny this more and more confidently, I wish that others would

either confirm themselves in their opinions or abandon them.

On the 18th and 19th December, 1843, I remarked, for the first time, that a large bitch which was in my possession began to be in heat. The vulva was much swollen, and the dogs followed her eagerly. On the 19th I tried whether she would suffer herself to be covered; but although she would play willingly with the dog, she would not permit coition. I kept her now closely locked up, and on the 21st again admitted a dog to her. Now she seemed willing to be covered. I did not, however, permit it, but again separated the animals.

On the 23d, at 10 o'clock A.M., I removed from this bitch the left ovary and tube, and closed the wound by suture. I found that the Graafian Vesicles had not yet burst, four of them were much enlarged, having a diameter of two to two and a half lines, or from four to five millimeters; I separated them carefully from the stroma of the ovary, and placed them, when made as clean as possible, upon a plate of glass. The moment I opened the first, the fluid escaping brought with it an ovule, surrounded by its disk, which had a diameter of $0.0078 \text{ inch} = \frac{11}{5} \text{ millimeters}$; to my surprise this Graafian Vesicle contained a second ovule with its disk, 0.0081 inch in diameter. The remaining three vesicles contained each one ovule of about the same size. The inner surface of the Graafian Vesicles was already covered with delicate granulations, the beginning of the corpora

lutea, which, as it seemed to me, was being developed from the cells of the Membrana Granulosa.

I observed here, very clearly, in several Graafian Vesicles, the mode in which the ova are lodged in them. The cells of the disk form a small projection, to which the ovule forms a sort of rounded head, and thus it is embraced in the fluid filling the Graafian Vesicle.

The base of this projection is attached to the wall of the vesicle, probably just where an opening will afterwards be made.

For the rest, these ova appeared obviously not sufficiently mature to be discharged, for not only were the Graafian Vesicles not yet much thinned, but the cells of the disk were not elongated into fibres, a change which always marks fully ripe ova. The ova were now separated with a needle from the zona, and then measured; their diameter was 0.0060 to 0.0065 inch. The vitellus filled the zona completely, and only on one small spot were the vitelline granules slightly separated from it, as if by the presence there of the Germinative Vesicle. Of the vesicle itself I could not, however, get a distinct view, neither while the ova were still complete, nor after I had crushed them by means of the compressor.

I believe that from the preceding detail of facts we may be assured that even if this bitch had now been covered, the spermatozoa could have had time to reach the ovary before the Graafian Vesicle ruptured.

Five days after this I directed her to be killed, in order

that the follicles might certainly be opened. And, in fact, I saw at the first glance at the ovary, that this opening had taken place. The tunica vaginalis of the ovary (formed by the peritoneum) contained a considerable quantity of limpid serum. Four corpora lutea were well developed on the ovary, on two of them the mass of the formative granulations sprouted luxuriantly from the recent opening of the vesicle; this I had very rarely before seen in the bitch. In the two others these openings had apparently closed earlier, before the mass of the corpora lutea were so much developed; hence they were more deeply sunk in the stroma of the ovary. Afterwards I carefully prepared the Fallopian tube, fastened it with pins to a wax tablet, and opened it with a small pair of scissors; I found the four discharged ova close together, at about three inches or eight centimeters from the fimbriate opening, the tube itself being five inches or thirteen centimeters long. Of the ova three had the usual normal, round appearance; the fourth, however, had characteristics which I had frequently seen before in the bitch. It was irregular, elliptical, almost guitar-formed. All the ova had the disk around the zona, yet it was obvious that the cells had no longer their full, normal appearance, but had already begun to dissolve. The size of the ova had already somewhat increased, for they measured with the disk from 0.0090 to 0.0097 inch in diameter.

This was not the case with the vitellus, it appeared to

have been somewhat condensed, so that it no longer filled up the zona in all the ova. Otherwise it had its usual form, without any signs of approaching division. In the space between the yolk and the zona was contained in one ovule that vesicle or granule which I have formerly declared to be the nucleus of the Germinative Vesicle, which, as it appears, is always to be seen in ova when in the upper part of the tubes, it was $\frac{1}{140}$ line or $\frac{1}{62}$ millimeter in diameter. In the three other ova I remarked nothing of this kind. Of the Germinal Vesicle itself I saw no signs in any of them. I do not think that it is possible to establish the whole process of the ripening and discharge of the ova during the heat and independent of coition, more satisfactorily than by this double observation made in one and the same animal.

On the 4th January, 1844, I removed the genitals from a sow, which had already for forty-eight hours shown the strongest signs of heat, but had not been put to the boar; I found that the Graafian vesicles had not yet ruptured. Upon both ovaries there were, however, quite a number of these, strongly developed and remarkable for the existence of large vessels, and a state of sanguineous congestion. Although none of these vesicles were yet ruptured, I removed from one of them, which I had detached from the ovary and opened upon a plate of glass, an ovule; it was, as usual, surrounded by the cells of the disk, which were still round and not at all drawn out into fibres. The diameter across the zona was 0.0060 inch. The Vitellus,

which consisted for the most part of pretty large fat globules, did not entirely fill the cavity of the zona.

After I had removed the cells of the disk with a needle, and had placed the ovule flat upon a plate of glass, it had increased in diameter to 0.0068 inch, and now completely filled the interior of the zona, while, at the same time, its elements were somewhat spread, and there appeared upon one point of its periphery a clear round spot, which those familiar with it would recognise as the germinal vesicle, although its margin, being covered with yolk granules, could not be defined.

During the examination, a slight pressure crushing the ovum, the germinal vesicle with its germinal dot passed out; the latter was of considerable size, but by no increase of the magnifying power used, could any further details of structure be made out.

This animal had evidently been killed at too early a period, at a time when the progress of the heat had not gone so far as the opening of the Graafian vesicle, and the discharge of the ovule.

A few weeks earlier, on the 4th December, 1843, I had examined the genitals of a sow which had from youth been kept from the boar. The owner assured me, that he had perceived several times before, indications of her being in heat, and that these had existed for some time before she was killed.

As to dates, however, he could not give the necessary

particulars. On examining the ovaries, fresh corpora lutea were found on both.

On the right, eight, each of the size of a large pea, and protruding consequently beyond the surface of the ovary.

Their color was dark, brownish red. In all, at their most prominent point, a small spot of vivid red was perceived, but a distinct opening was no longer to be seen; yet when the tunica propria of the ovary, with its serous covering, was detached from the surface of such a corpus luteum, then it became evident that it was penetrated by a small opening just at the red spot.

The corpora lutea consisted of a superficial layer of fleshlike granulations about a line thick; as they are always thus developed on the inner surface of the Graafian vesicle, in its transition to a corpus luteum.

This layer inclosed a considerable cavity filled with a dark red coagulum of blood, which was closely adherent to the granulations. In none of them could I discover an ovule.

On the left side there were two corpora lutea of the same description, and near them two others, much larger, almost transparent and of a shining red color. The small red spot appeared on their most prominent points. The superficial layer was much less developed than that of the others; it contained a translucent reddish coagulum, and also a quantity of uncoagulated fluid, which, however, coagulated on being poured on the plate of glass and exposed to the air.

This coagulum was connected with the walls of the corpus luteum; these, too, might have been taken for Graafian vesicles not yet burst, as, at least in dogs, the mass of the corpus luteum begins to develope itself from the walls of the vesicles before they burst.

But the following circumstances, viz :

1st. The small red spot on the most prominent point, and the position of the opening ;

2d. The fact that blood had already been effused into the cavity ; and,

3d. The want of an ovule, which I at least could not find, all lead to the opinion, that these two vesicles had already ruptured, but that afterwards, as I have seen in bitches, even when I have afterwards found the ova in the tube, the opening was closed up again, and a second effusion of liquor sanguinis had taken place into the emptied vesicle, by which it was again distended.

I was not so fortunate as to find the ova in the tubes, though I searched for them carefully several hours; but this I consider so difficult, on account of the width and length of the tube, and its numerous folds, that I cannot regard the negative result as proving anything. Moreover, it is probable, that the ova not being fecundated, were already dissolved. The marked development of most of the corpora lutea, and the inconsiderable degree of turgescence of the Uterus and Vagina, seem to indicate that the period of heat had already passed for some time. In another sow, which also had from youth been kept from the boar, I found, fourteen days after she had been

in heat, a corpus luteum completely developed in the ovaries, but considered it useless to search at so late a period for the ova.

Soon afterwards, I received the genitals of a young sow which had never been pregnant. I was sure that she had been kept apart for thirteen days. Five days before, the first indications of heat had manifested themselves, and after these had already begun to decline, the animal was killed on the morning of the fifth day.

The first glance at the ovaries satisfied me that the ova were already discharged, for on one of them seven, on the other six, fresh corpora lutea were developed; no opening was found in them, nor did they present any longer the large cavity filled with blood or serous fluid; but the Graafian Vesicles were already as usual quite filled with granulations; and the place of rupture could easily be distinguished by its deeper redness.

I proceeded at once to examine carefully the tube, eleven inches long, with its numerous folds, particularly the first half, by removing the epithelium from portions of it, and examining it under a simple microscope. I succeeded in finding ten ova in the lower portion, about two to four inches from the Uterine orifice. They were at some distance apart. When observed under the microscope, they appeared in general similar to ovarian ovules which had lost the discus proligerus. Their diameter was 0.0064 to 0.0068 inch $= \frac{1}{15}$ line $= \frac{1}{6}$ millimeter nearly. Not a vestige of albumen was found around the zona, which

formed the single thick envelope of the ovum ; with most of them it was $0.0005 \text{ inch} = \frac{1}{17} \text{ line}$ or $\frac{1}{3} \text{ millimeter}$. The yolk in most of these ova did not completely fill the interior of the zona, and varied in its diameter from 0.0040 to $0.0054 \text{ inch} = \frac{1}{51} \text{ line} = \frac{1}{9} \text{ to } \frac{7}{50} \text{ millimeter}$.

In its composition the same larger fat globules were found, which distinguish the ovarian ovule of the sow, but they were generally unequally distributed through the yolk, so that the latter had an irregularly spotted appearance. The outline of the yolk was in this instance so sharp, that it might easily have led one to believe in the existence of a peculiar yolk membrane. Especially was this the case in certain positions of the microscope. This has happened to Doctor Mayer, in regard to the ovum of the sow ; but the same precautions to which I have already referred in regard to the ovum of the ewe afforded, in this instance also, full proof that no such membrane existed.

Of the Germinative Vesicle I could discover nothing ; but in some ova between the yolk and zona the pale granule was again found, which I supposed to be the nucleus of the Germinative Vesicle, the germinative dot, as I have before stated.

These three observations on the sow, furnish for this species a complete demonstration of the law I have established.

I think I ought here to adduce the following observation made on a rat. The rat was caught in a trap on the night between the 1st and 2d Feb., 1844, and remained

there alive until the third of the same month, at 10 o'clock, A. M. After it was drowned, I found in the ovary many large and fresh corpora lutea. As I inferred from this that impregnation had recently taken place, I searched the Vagina, Uterus, and tubes most carefully, but I found nowhere any signs of the male semen, but I did find, in the beginning of the tube, the discharged ova. Let me remark, that in this animal, as in the mouse, it is exceedingly difficult to find ova in the tube; that canal is in the first place so narrow, that it is impossible to slit it up with any scissors, however small. There remains therefore no course to pursue, but carefully to unfold all the windings of the tube, which is no easy matter, as they are closely bound up, and the tube itself is scarcely half a line in diameter; then we are to empty the tube of its contents by gentle and very gradual stroking, till all is crowded out and received upon a plate of glass; this mass is then to be most carefully examined with a simple microscope (*Oberhauser's Pancratic Microscope*). The ova are even now very difficult to find, as they are not only very small, but almost perfectly transparent, the yolk being formed of a very pale, finely granulated substance. I was, however, as above stated, so fortunate as to find the ova in the upper third of the tube. They had, the zona being included, a diameter of 0.0046 inch = $\frac{1}{20}$ line or $\frac{1}{9}$ mill. The thickness of the zona was about 0.0002 inch or $\frac{1}{400}$ line or $\frac{1}{166}$ mill.

The cells of the disk were no longer seen around the zona. The vitelline mass filled the zona perfectly in

all these ova, and I could not discover any vesicle, corpuscle, or the like. I think this last circumstance very important if it did not admit of any doubt of its correctness, for as the yolk is almost perfectly transparent, we could here observe better than in any of the Mammalian ova that have as yet been examined, the metamorphoses which the Germinative Vesicle and dot undergo before the division of the yolk. But the contents of the tube are so small in quantity that we cannot examine the ovum without first adding a fluid (saliva), and it is a question to what changes in the minute ovule this circumstance may have given rise. An ovarian ovule which I examined had about the same diameter, the yolk was yet paler, and in it I saw most distinctly the Germinative Vesicle, having a diameter of 0.0011 inch or $\frac{1}{70}$ line, or $\frac{1}{31}$ millimeters, and the Germinative Dot 0.00039 inch or $\frac{1}{250}$ line, or $\frac{1}{93}$ millimeters in diameter. The dot refracted light very strongly, had a very dark outline, and resembled a fat globule. Now I think that this rat had not been covered, and that yet the ova had left the ovary and passed into the tubes. Had copulation taken place, according to all the observations I have made on other animals, some spermatozoa would have been found in some part of the genital passages, the ova being yet in the upper part of the tube. In a mouse in which, about two years before, I found the ova nearly in the same part of the Fallopian tube, the whole uterus and tubes were full of semen, and spermatozoa were even found on

the zona of the ova. Probably, then, this rat was chased into the trap by the approaches of the male, and the ova there escaped from the Graafian Vesicle independent of coition.

In the rabbit, former observers, and among the rest Barry (*Researches in Embryology, second series*, p. 319, § 161), have pretty frequently found the Graafian Vesicle in the ovary swollen and filled with blood. This has happened to me many times, but always only with those that had for a long time been kept from the male. I never found an ovule in such cases, but often blood corpuscles, the shape of which was more or less completely preserved and could be recognised.

I consider it probable that this Graafian Vesicle resulted from a former heat, and that the ova were discharged without coition and fecundation having taken place.

A short time ago I examined a rabbit, six or eight hours after coition; the ova were not yet discharged, though the Graafian Vesicle was very much swollen. Besides, on both ovules were found corpora lutea of considerable size, which could not have resulted from a preceding pregnancy, as they were too large for that, and as moreover the animal had been kept from the male for many weeks. I therefore believe that they also were corpora lutea arising from a former heat, during which coition had not taken place.

Now, from all these observations, it is quite certain that the ova in the Mammalia in the time of heat, no

coition taking place, are detached from the ovary, enter the tube, and perish there ; and that corpora lutea are formed in the ovaries just as though coition and fecundation had been effected.

As further proof to the foregoing observations establishing the maturation and discharge of the ova independent of the male semen, I will add yet another fact, which, in another way, proves the same in regard to the male semen.

On the 6th March, 1842, I examined a bitch, the time of whose first covering I did not distinctly know, but which, to my certain knowledge, had been covered the day before : the left ovary had three corpora lutea, and I found in the middle portion of the tube three ova in just that state of development which might be expected at that period ; the right ovary was, on the contrary, very small, and contained neither an enlarged nor a ruptured Graafian Vesicle, nor corpora lutea ; of course no ovum was found in the tube, but I found spermatozoa in the uterus and tube, quite up to the ovary.

This proves conclusively that in the present instance no agency of the spermatozoa was operative. According to the general mode of viewing manifestations in the organic world, which are supposed to be subject to a certain innate law, we should have been led to suppose that the semen would not reach an ovary in which no mature ova were to be found. But the semen had followed its natural track without reference to the ovum,

and the latter on the other side advanced in their development independent of the semen ; no attraction, no polarity, nothing of the kind was operative, none of those agencies which are so often relied on to explain certain occurrences in Nature.

The ovum and the semen are, then, quite independent products of the parent organisms: their coming in contact, and the consequent fecundation of the ovum, are circumstances, in themselves quite accidental, though so essential to the continuance of the species. This is frequently observed in other parts of the organic kingdoms.

If, by the preceding statements, it has been proved, in regard to the Mammalia, that their genesis and propagation is, *primo loco*, dependent on a spontaneous, periodic formation and maturation of ova, and not on coition, we are by analogy led to suppose the same in regard to the human female ; but proofs, at least indirect ones, are not wanting.

It is known that for a long time menstruation in the human female has been compared with the heat in animals ; this view has been received at all times by most intelligent physicians and naturalists, though it has been combated by men not less eminent. 'Though considering Burdach as the most prominent among the latter, yet it appears to me that of all the reasons which he advances to prove the difference between heat and menstruation, that of the greatest weight is derived from the then

state of the sexual appetite, and the admission of coition. "The lower animals will copulate only at the time of heat, while man has even felt himself repelled at the period of menstruation." If this were accurately true, then, in my opinion, an essential difference would be established; but, attentive observers have before now remarked, and I can confirm it—such a difference does by no means exist; for the female of the lower animals evinces a state of impaired health in the beginning of the heat, and does not admit the male; it is only when the phenomena of heat have been to a certain degree developed that she seeks coition. Now it is known that with the human female, after menstruation is over, a feeling of improved health exists, and the sexual appetite is particularly manifested. The most complete correspondence is therefore found in these respects, and the reasons which have been adduced to prove the analogy between the heat and menstruation seem to me unimpaired. To repeat those reasonings I consider superfluous.

Moreover, all intelligent anatomists, physiologists, and physicians, have for a long time been convinced that the cause of menstruation, as well as of sexual instinct, and of the whole female character, is to be found in the ovaries; and that the uterus, on the contrary, though by it the sexual apparatuses in the different classes and genera of animals have been typified, is, in this relation, quite of secondary importance. Numerous cases in

pathology the most diverse in character, and numerous deviations from the normal type (malformations) concur entirely in this respect.

I will mention here only a few of them, indeed but one ; it is more recent, and but little known, and respects the castrated women of India. It is communicated by Dr. Roberts, in his Travels from Delhi to Bombay.

The individuals he examined were about twenty-five years old, of large size, quite muscular, and in full health ; they had no mammæ, no nipple, no hair on the pubis, the orifice of the vagina was completely closed, and the pubic arch so narrow that the ascending ramus of the os ischium, and the descending ramus of the pubis of the opposite sides, came almost in contact. The whole pubic region showed no deposit of fat, and the nates were not more developed than in males, while the rest of the body had the usual quantity of fat. There was no trace of menstrual secretion, nor any discharge vicarious to it ; no sexual appetite.

Quite recently direct anatomical proofs of these statements have been furnished. Strange as it first appeared, considering the endless controversies which have been carried on about the corpora lutea, it now however does not admit of a doubt, that the ovary, at the time of each menstruation, is in a state of great excitement, that a Graafian Vesicle is considerably developed, bursts, and a corpus luteum is formed in its place. The investigations of Robert Lee, Paterson, W. Jones, Negrier, Gendrin, Racibor-

ski, and Pouchet, remove from this question every vestige of doubt.

It would lead me too far here, to repeat their observations. I will only mention, that I myself have had occasion, four times, to make examinations bearing on this point; all four in young, strong persons, three of whom had been drowned, and the fourth died suddenly.

I found in each the indubitable tokens of menstruation, and at the same time in three of them, on the ovaries, ruptured Graafian Vesicles, filled with coagulated blood; in the fourth a vesicle enormously enlarged (about 7 lines in diameter).

Respecting one case I afterwards learned, that menstruation was in progress when she lost her life by an accident. I have just received notice from Doctor Ecker, Prosector in Heidelberg, that he found in a person twenty years old, who had menstruated twelve days before her execution, a ruptured Graafian Vesicle filled with a fresh coagulum of blood; in vain, however, did he examine the tube for an ovum; it is probable that it was at this time dissolved. In my opinion, the human ovum will ever be found with the greatest difficulty in the tube, on account of its yolk being not compact, and its zona having no sharp outline. It is not therefore to be wondered at that numerous former observers, Valisneri, Santorini, Roederer, Haighton, Home, Brugnoli, Cruikshanks, Meckel, Blundell, and others, have observed corpora lutea in the ovaries of females who had never been pregnant, and even of girls and small children.

These were always regarded as exceptions to the general rule, as pathological cases, as consequences of accidental sexual irritation not accompanied by coition; while they were doubtless the consequences of a recent menstruation, or rupture of a Graafian Vesicle, with discharge of an ovum.

Finally comes the long known fact, that females conceive most certainly immediately after menstruation, and examples are not wanting where this occurred with some *only* at the time of menstruation. It is also settled, that no mode of reckoning the period of pregnancy is so accurate as that from the last menstruation. Prof. Nægele has told me, that he never has been deceived in regular cases, when reckoning nine months and eight days from the last period; at the same time he informs me, that he has in several cases removed barrenness by advising copulation immediately after, or even during the menstrual flow. Though the direct demonstration of the fate of the ovum during and after menstruation is wanting (I wish that I may have the opportunity, and the necessary care and good fortune, one day to discover it), it is nevertheless not doubtful what that fate is. In the human female, during menstrual life, the maturation and discharge of an ovarian ovule takes place every four weeks, accompanied by a contemporaneous discharge of blood. This periodical maturation of an ovule is the primary and principal condition on which conception and pregnancy depend. At this time only will coition be followed by conception, which at

all other periods is impossible. I do not doubt that if in future this law be tested by actual experience, it will be found entirely correct, and will lead to an explanation of many phenomena not now understood.*

It will then become evident, within what limits the application of this law is to be restricted in the human female. It appears that the discharge from the Uterus begins while the ovule is still in the Graafian Vesicle, and that it is not detached till the cessation of the flow. While in the tube it is probably capable of being fecundated for several days, if coition supervene. How long? This can only be settled by direct observations, which as yet are altogether wanting. Thus much, however, I believe may be received as certain; that fecundation must take place in the tubes, because here, very probably, development begins.

If we may, according to views heretofore stated, conclude, that the ovum of the rabbit remains in the tubes three, that of the rodentia four or five, and that of the

* Dr. Panck, of Dorpat, has recently published a case, in which he thinks he found a remarkable organic connexion between the tube and the ovary soon after conception, by which the passage of the ovum, from the ovary into the tubes, is facilitated and secured. For my part I am convinced, that this was beyond doubt only a case of commencing menstruation, and not of conception, as even the preceding coition was not proven; as, moreover, Prof. Bidder did not find any spermatozoa in the genital organs, and though the supposed coition was said to have taken place five days before, the Graafian Vesicle was still closed. The organic connexion between the ovaries and the tubes, I decidedly consider to be pathological. Such delicate pseudo-membranes, exhibiting the characteristics just described, are very common in the female genital organs.

bitch about eight or ten days, as far as we know, then we may suppose, that the human ovum still exists for from eight to twelve days after its discharge from the ovary, and therefore, that for eight or twelve days after the menstrual flow has ceased, the ovum is susceptible of fecundation. Such a conclusion, however, from analogy is hazardous; because we know that, as to the time during which the ovum remains in the tube, very great differences exist in different animals. For instance, the ovum of the deer requires for its passage through the tubes into the Uterus, according to the observations of Dr. Ziegler and myself, probably some months. All calculations of time which have been made, in which ova twelve or fourteen days old are said to have been seen in the Uterus, in which even the embryo also was much developed, are quite unreliable, because they date from the time of coition, which determines only the period of fecundation, but not from the time of discharge of the ovule from the ovary, and thus admit of no conclusion as respects the latter.

It is possible, that the reason why actual observation affords us nothing satisfactory on this subject is, that the human ovule is for so long a time susceptible of fecundation.

On the other hand, it does not appear that any ordinary causes, as physical or moral excitation of the sexual instinct, or the like, can accelerate the time of maturation of the ova, or affect the period of possible fecundation, all observation upon menstruation proving, that the postponing or anticipation of a period are only produced by powerful

influences. With this view of menstruation, viz. that it indicates the time of the ripening of an ovule, all that is known of it is entirely congruous; but at the same time all experience shows, that a change of time, by mere excitation of the sexual appetite, is very uncommon. Moreover, as to corpora lutea, recently collected observations prove, that the causes alluded to can scarcely be supposed to produce them.

It is certainly unnecessary to direct attention to the great importance of the discovery of a law, which concerns one of the most important interests of Man. Science as well as general society are deeply concerned in it. I therefore have the strongest desire that further and numerous examinations may be made, and that old and deep rooted prejudices, which are so often received as actual experience, may not impede its progress. Whoever undertakes the examination of this law should fit himself for it by thorough study of previously recorded embryological researches; for that it involves matters not easily settled, the errors of former ages—ages that were by no means indifferent to the question—abundantly prove. I hope to be able to satisfy any well grounded doubts, and will at this time try to remove one of those which have often been brought to my notice. I have often been asked: If conception is dependent on menstruation, and this on the maturation of an ovum, how is it possible that females conceive, never having menstruated?

I answer to this by simply stating, that, though the

discharge of blood is a normal and easily cognisable symptom of the maturation of an ovum, the latter is, nevertheless, not essentially dependent on it, a single glance at the animal kingdom proves—this periodic maturation of ova is there seen both with and oftener without such discharge of blood. Menstruation, then, is, in the human female, an entirely normal and important, though by no means essential, but rather accidental symptom of ovulation. It may be wanting, and yet ova mature, and be therefore susceptible of development and fecundation. This may be easily reconciled with the fact that in such women no diseased appearances are found. There will certainly not be wanting many who will doubt the law I have announced, because it is difficult to conceive that such an important subject had for so long a time escaped all notice, and particularly that of the anatomists and physicians in their manifold controversies respecting the corpora lutea. I answer this: first, it is certain that many points relevant to this have been long known; as, for instance, the dependence of the power of conception on menstruation—conception being more apt to occur directly after menstruation—the reckoning of the period of pregnancy from the last menstruation, &c. The reason why these observed facts did not lead to a full knowledge of the subject undoubtedly is, the frequent recurrence of menstruation—of the maturation of an ovum, and of the possibility of conception.

If the human female menstruated but once or twice a

year, it would long ago have been remarked that these were the only periods at which conception was possible. Menstruation would long ago have been recognised as perfectly analogous to the heat in animals, even though the most important element, i. e. the maturation of the ovum, had not been discovered. As on the one hand menstruation recurs every four weeks, and as conception is so often possible, it was not easy to fix the limits within which it was to be restricted, without further observation, and on the other hand menstruation passes by so often, without its purpose, i. e. conception, being attained, it was quite natural that attention should be directed more towards the former than to the dependency of the latter upon it. In animals, just the reverse relation opposes a correct appreciation of the analogy between the heat and menstruation. With them the heat occurs either very rarely, once or twice a year, or, if it is oftener, as, for instance, in the cow, the ewe, the sow, &c., the common circumstances and purposes in domestic economy cause that this relation is obscured, either by the fact that the animals are immediately fecundated, or the maturation of the ova is prevented or retarded by lactation. This is certainly the reason why the very remarkable analogy offered by one of the commonest domestic animals, the cow, has, for the most part, remained unnoticed. As to the researches of the anatomists and physiologists, I may observe that they have but recently made any correct observations, namely, those by which the

formation of corpora lutea, independent of coition, was proven. But that they did not correctly interpret these observations, and did not make any progress, is only a new proof how necessary for observation it is, not only to have the corporeal eye and hand, but the mental eye as well: how necessary it is that our observations be guided by thought even that we may correctly perceive relations however simple—but the ideas were not matured and could not be so—and the eyes of men otherwise distinguished were not open to them. Finally, we have to take into account that the opportunities for observations are very rare. After natural death, such an opportunity is not easily found. Menstruation, the maturation and discharge of ova is usually so dependent on the general health that the disturbance of it nearly always precedes death. In post mortem examinations, therefore, nothing is usually found. It is only after deaths by violence that we can hope, in healthy persons, on dissection, to make observations bearing upon this subject. How many among them will meet with an accident just at the time of menstruation? And again, how many of these will fall into hands capable of making such delicate investigations? The most favorable opportunities for such observations may be in future afforded by executions, where the relation of time may be fixed with reference to the observation. In conclusion, I must add some historic notices on the matters under discussion. It is known that on the subject of generation scarce any train of

thought can be imagined, which had not already been theoretically presented: the matter was too important not to have all possible modes suggested. No wonder, then, if former observers have here and there thrown out ideas which approximate more or less to the law I have established. There never is an important and comprehensive discovery made at once; the elements of it are generally obtained from different quarters, and from all these truth at last results. Thus it is evident that all the countless investigations and experiments which have been made and collected on the subject of generation, must be recognised as preliminary steps towards discoveries to which we are indebted for the insight we at last gained.

It has also often happened that reflecting men, guided by general ideas and analogies, have enunciated truths which only at some future period could command general acceptance and acknowledgment. This always has happened and always will happen,—when the direct proofs of such a truth, which the true natural sciences always strictly require, are wanting. Under such circumstances such ideas may gain supporters, but they will not be generally received, and it usually happens that they are set aside by views less correct, founded on similar data, until at last the direct proofs are furnished, and thus an objective and not a subjective truth is added to science.

History has, in most cases, been so just as to award

the honor of the discovery to him who furnishes these direct proofs. I wish that in the present instance judgment may be rendered according to this rule.

I will assert that the law I have indicated, though there may be many traces of a knowledge of it among my predecessors, is certainly to be considered as entirely new. I rely for the proof of this simply on the consciousness of every individual of the views he has gained from the now existing writings and teachings. Certainly the most recent and most approved text books and compendiums, both of German and of foreign physiologists, may serve as such proofs. I appeal to Burdach, in whose *Physiology*, vol. i., the theory of generation is investigated throughout from an opposite point of view. It may suffice to refer to pp. 536 and 554. Compare further what Müller, in his *Physiology*, p. 640, says on menstruation, on the detachment of the ova from the ovaries, p. 644. On fecundation, p. 647. On the formation of the corpus luteum, p. 701. In the same manner I may also refer to Carus's *Physiology*, pp. 418 and 456. Finally, to Rudolph Wagner's *Physiology*, 2d edition, p. 45, paragraph 34, and p. 51, paragraph 42.

Of French writers I name Magendie, *Physiologie*, vol. ii., p. 458, *et seq.*, translation of Heusinger. Duges, *Traité de Physiologie Comparée*, vol. iii., part 6, on the Function of Propagation, *passim*. These references will suffice to show that the doctrine here expounded is quite new. I was gradually led, by my labors on the subject

of generation and the formation of the Mammalia, to the appreciation of the law to the development of which this tract has been devoted. The observation made on the 11th June last, opened my eyes. After this, I could not, for a time, find my way through the multitude of conflicting experiments. In July I accidentally communicated the conclusion I had gained to M. Breschet, in Paris, who had the kindness to read my letter to the Academy, at the session of July 17th; on which occasion, by a remarkable accident, M. Raciborski, immediately afterwards, stated his conclusions from anatomical investigations of the ovary of the human female, leading him to embrace opinions similar to mine, *vide Comptes Rendus*, t. xvi., No. 3, July 17, 1843. At the next session of the Academy, M. Duvernoy proved that he had announced the same idea in the autumn of the preceding year, at the meeting of naturalists at Strasburg, without, however, adducing any observations made on the subject (*vide Revue Zoologique*, 1842, *L'Experience*, No. 319, August 10th, 1842, p. 89). M. Breschet, at the end of August, sent me a publication of M. Pouchet, professor of Zoology at Rouen, *Theorie positive de la fecondation des Mammifères, basée sur l'Observation de toute la serie animale*, Paris, 1842. This work, which, until then, had been quite unknown to me, is at present probably still quite unknown in Germany, in consequence of the want of intercommunication of publishers. In the *Gazette Médicale*, No. 36, September 9th, p. 585, Pouchet

declared that he had already stated the contents of his book, in 1835, and that the book itself appeared in March, 1842. In its contents he claims priority over me, which he attempted to establish in the *Gazette Médicale* of October.

Afterwards appeared M. Raciborski, who, in the *Gazette Médicale*, No. 35, September 2d, p. 54, and in *L'Expérience*, No. 331, November 2d, claimed for himself a priority in the whole matter. I have answered all this in the *Gazette Médicale*, September 23d, 1843, and am now for the first time able, having been much engrossed by the necessity of removing from Heidelberg to Giessen, to communicate my discovery to my countrymen. I believe that M. Duvernoy, as a profound and able investigator of zoology and natural history in general, has arrived, by striking analogical proofs, at the knowledge which he so briefly announced. To M. Raceborski I can only grant a share in the advancing of the subject, with W. Jones, Professors Lee, Paterson, Negrier, and Gendrin, who have successfully labored before him in proving that the Graafian Vesicle, as well in the Mammalia as in the human female, is subject to a gradual development and enlargement, and at last, at the time of heat, as at the period of menstruation, bursts, and that the corpus luteum is formed though no coition has taken place. Does not the first communication of M. Raciborski, *Gazette Méd.*, 13th Dec., 1842, prove, even when most favorably interpreted, that he himself was not conscious

of the whole importance of the truth contained in his statement? This is best proven by his later communication, made to the Academy on the same day in which M. Breschet read my letter, *Comptes Rendus*, July 17th, 1843.

At a *later* period he has tried to impart to it all the importance that we may and must attribute to it in its connexion with the subject under discussion. But his *subsequent communications* in the *Gazette Médicale* and *L'Expérience*, and some other periodicals, cannot, of course, be taken into account as affecting the question of priority, though they were, as something foreign, received very eagerly by German journals, which did not devote a single syllable to me or my claims. For instance, *Osterreichische Med. Wochenschrift*, also Kleinert's *Repertorium*, &c. M. Pouchet, on the other hand, has incontestably developed the law upon which the generation of the Mammalia and man depends, more perfectly than any writer known to me. He has announced it not only in its entire comprehensiveness, but has, at the same time, sustained it by all the analogical proofs, and every variety of experience whether collected from others or made by himself, on menstruation and the formation of the corpora lutea, so that, in these respects, I am unable to add anything. I can, therefore, recommend his publication to all who desire to be possessed of correct views of the subject as far as it can in this way be shown. But he has not himself made any experiments on fe-

cundation, nor has he furnished the incontestable and direct proofs, by following up the most important part of the subject, *the ovum itself*. He has made the matter in the highest degree *probable*, but he has *not proven it*. He would have won many to it, but he could not have led to any general acknowledgment of its truth. M. Pouchet thinks he has proved the same that I have, because he had observed ova in the human female, and in the lower animals, who had not been in contact with the male, the ova being just about to be detached from the Graafian Vesicle. Only a small difference exists in respect to the place in which he and myself had proven the same law; he, that the ova were matured in the ovary during the heat, I, that they entered the tube.

But if we read his observations above referred to, pages 64, 65, and 68, we may by possibility gain the conviction, that he has seen ovarian ovules in non-fecundated animals, though even on that point very great doubts may arise, when we read page 64, where this ovarian ovule is said to have been one fourth part the size of a Graafian Vesicle; the latter, therefore, can have had at most no more than $\frac{1}{3}$ line in diameter, and can have hardly been visible to the naked eye, and certainly could not have been mature. On the other hand, we may seek in vain for proofs from which we could conclude that the ova he had seen could have been *mature*, and ready to be immediately discharged, as I have described such, both in this and in former writings. Besides, numerous errors are

found in his publication, errors which are already refuted by my former observations. For instance, his *loi physiologique fondamentale* iv., and *loi physiologique accessoire*, i., according to which the semen *never* penetrates to the ovaries, and fecundation, when normal, always takes place *in the Uterus*.

I believe I am not mistaken in considering the exposition of the characteristics of the mature ovum, and above all, its passing into the tube *without coition*, the most *important*, and I may venture to say the most *difficult* part of the investigation.

This I claim for myself. For M. Pouchet, our investigations rest on quite different bases. I believe he has furnished the indirect, I, the direct proofs. May this coincidence impart to this subject its due importance, and may this explanation not appear as the desire for victory of a vainglorious boaster, but only a wish to give every one his due.

Giessen, Feb. 1844.

Postscript.—I have just received the February No. of *Schmidt Jahrbuchern*, in which is contained, p. 198, an extract from an article by Dr. Argenti of Padua, in *Omodei. Ann. univ di. Med. Febbrajo et Marso, 1843*, in which the author announces himself as an adherent of the law here developed. But, as he also has been guided, not by special investigations, but only by theoretical argumentation, on the known facts concerning menstruation, corpora lutea, and the other appearances in animals, it will readily

be believed, that he falls sometimes into error ; for instance, he considers as impossible the passage of the semen through the tubes and to the ovary, and he is afterwards quite uncertain as to his own theory, for he concludes with the remark, that it was not necessary that at each menstruation an ovum should be conducted to the Uterus.

TO THE GENERAL READER.

The present is emphatically an age of "progress." So rapid are the advances now making in art and science, that the surprise caused by any great invention or discovery hardly subsides, ere it is followed by another equally or perhaps more surprising. Of this onward movement the thinking man will desire, and the well-informed, will be expected to possess, a general knowledge. Inclination and necessity, therefore, must prevent their limiting their reading to any one department of literature. The "healing art" (including under this term both medicine and surgery) has participated, in an eminent degree, in the "progress" of the age. The evidence of this, however, is spread over the pages of numerous journals and monographs, mostly inaccessible to general readers. To the wants of such, the work here offered, though chiefly designed for the Medical Profession, is particularly adapted; being a compilation from all the Medical and Surgical Journals of the day, American and Foreign; thus bringing before the mind, in one view, all that is doing in this field of knowledge; and at a price which places it within the reach of all. To the Clergyman, Teacher, or other man of general reading, professional or otherwise, it offers facilities for information in this department, to be found, it is believed, in no other work.

WOOD'S QUARTERLY RETROSPECT

OF

AMERICAN AND FOREIGN PRACTICAL MEDICINE AND SURGERY.

PUBLISHED BY RICHARD AND GEORGE S. WOOD,

No. 261 PEARL STREET, NEW-YORK.

Price One Dollar Per Annum in Advance.

This work is designed to meet the demands of this "high-pressure" age, by furnishing the physician and surgeon the means of keeping pace with the progress of knowledge in their respective departments of science, at the *least possible cost of time and money*. It consists of condensed reports of cases and their treatment, with occasional remarks, and abstracts of the medical literature of the day, collected from the whole field of medical science, American and Foreign, with announcements of all new publications of interest to the profession.

Its plan is, in the main, that which has been so much approved in "Braithwaite's Retrospect" and "Ranking's abstract;" with the superadded advantages of a fuller view of *American Medical Literature and Science*, a more frequent emission, and reduction of price; and it is hoped will meet the general approbation of the Medical Profession. It was suggested by some members of the profession as a desideratum in medical literature not yet supplied by any journal; and the publishers intend, if well sustained in the undertaking, to spare neither pains nor expense to make it worthy of the most extended patronage.

It will be seen at once that, at a price so low, it can only be supported by a very extensive circulation; but the advantages offered are such, that this is confidently anticipated; and they request all to whom this is sent, who approve the plan, to aid them by bringing it to the notice of their professional brethren.

Authors and Publishers wishing their works reported, will please forward copies.

RECOMMENDATION.

A work like "Wood's QUARTERLY RETROSPECT," presenting a view of American and Foreign Practical Medicine and Surgery, so extended as to omit nothing of material interest, yet so condensed as to meet the demands of those whose want of time or means prevents their access to the various sources from which it is compiled, was much needed; and we cordially commend it to the patronage of every member of the Medical Profession.

ALEXANDER H. STEVENS, M.D. Pres. and Emeritus Prof. of Clin. Surg. of Coll. of Phys. and Surg.

JOSEPH M. SMITH, M.D. Prof. of Theo. and Prac. of Med. and Clin. Med.

JOHN B. BECK, M.D. Prof. of Mat. Med. and Med. Juris.

JOHN TORREY, M.D. Prof. of Bot. and Chem.

ROBERT WATTS, JR., M.D. Prof. of Anat.

WILLARD PARKER, M.D. Prof. of Prin. and Prac. of Surg.

CHANDLER R. GILMAN, M.D. Prof. of Obstets. and Dis. of Wom. and Child.

ALONZO CLARK, M.D. Lect. on Phys. and Path.

GUSTAVUS A. SABINE, M.D. Dem. of Anat.

VALENTINE MOTT, M.D. Prof. of Surg. and Path. Anat. in University of New York.

SAMUEL HENRY DICKSON, M.D. Prof. of Theo. and Prac. of Med.

GRANVILLE SHARP PATTISON, M.D. Prof. of Genl. and Descrip. Anat.

MARTYN PAINE, M.D. Prof. of Insts. of Med. & Mat. Med.

GUNNING S. BEDFORD, M.D. Prof. of Midwif. and Dis. of Wom. and Child.

JOHN WILLIAM DRAPER, M.D. Prof. of Chem.

WILLIAM H. VAN BEUREN, M.D. Prosec. to Prof. of Surg.

WILLIAM DARLING, M.D. Dem. of Anat.

Since its first appearance the RETROSPECT has met with general approbation; and many testimonials in its favor might be produced; but the publishers deem it unnecessary to give more than the foregoing from the Professors of the two Medical Schools of New York; hoping that, as the price is so low, those who wish to know more of it, will give it a trial for one year, and ascertain its character from the work itself.

Subscribers in ordering this work will please write their names legibly, and at full length, adding their respective titles, and the names of the town, county, &c., of their residence.

By the new Postage Law, subscribers to Periodicals are allowed to save postage and the risk of transmission by paying their own postmaster, requesting him to give notice thereof to the postmaster where the publisher resides, and remitting his receipt, instead of the money, to the publisher. We hope they will take advantage of this.

SAMUEL S. & WILLIAM WOOD
BOOKSELLERS AND STATIONERS,

NO. 261 PEARL STREET,
(OPPOSITE UNITED STATES HOTEL),
NEW YORK;

HAVE FOR SALE AN EXTENSIVE ASSORTMENT OF
MEDICAL, SCHOOL, CLASSICAL, THEOLOGICAL, AND
MISCELLANEOUS BOOKS, BLANK BOOKS,
PAPER, GLOBES, AND STATIONERY;

WHICH THEY OFFER
AT LOW PRICES.

THEIR ASSORTMENT OF MEDICAL BOOKS IS BELIEVED TO BE
MORE VARIED THAN ANY OTHER.

Catalogues may be had on application.

SAMUEL S. & WILLIAM WOOD,

N. 261 Pearl Street,

(OPPOSITE UNITED STATES HOTEL,)

NEW-YORK,


HAVE FOR SALE A VERY EXTENSIVE COLLECTION OF **MEDICAL BOOKS,**

More varied, as they believe, than any other in the country.

Professors and Lecturers of Medical Schools will here find many valuable Books and Engravings, adapted to their wants, and finished in superior style.

In the collection, mostly of recent importations from London and Paris, are the following :—

- QUAIN'S ANATOMY OF THE ARTERIES OF THE HUMAN BODY, 87 coloured plates, large as life.
- BOURGERY et JACOB.—ANATOMIE ELEMENTAIRE, 20 coloured plates, half natural size.
- BOURGERY et JACOB.—TRAITE COMPLET DE L' ANATOMIE DE L' HOMME.—76 *Numbers of this work are published: the whole work to contain about ninety numbers, and about 700 coloured plates.*
- DERMOTT'S ILLUSTRATIONS OF ARTERIES CONNECTED WITH ANEURISM AND SURGICAL OPERATIONS, 9 coloured plates, size of life.
- CRUVEILHIER, J.—ANATOMIE PATHOLOGIQUE DU CORPS HUMAIN, 233 coloured plates.
- ALIBERT, J. L.—MALADIES DE LA PEAU 63 coloured plates.
- CAZENAVE, A.—LECONS SUR LES MALADIES DE LA PEAU.—4 *numbers published, to be completed in 10 or 12 numbers, with about 60 coloured plates.*
- CAZENAVE, A.—MALADIES VENERIENNES DE LA PEAU, 12 coloured plates.
- RICORD, P.—CLINIQUE ICONOGRAPHIQUE DE L' HOPITAL DES VENERIENS.—16 *numbers published, to be completed in 18 or 20 numbers, with about 50 coloured plates.*
- DUPUYTREN.—MEMOIRE SUR UNE MANIERE NOUVELLE DE PRATIQUER L' OPERATION DE LA PIERRE, 10 plates.
- FLOURENS, P.—ANATOMIE GENERALE DE LA PEAU ET DES MUQUEUSES, 6 coloured plates.
- FLOURENS, P.—MEMOIRES D' ANATOMIE ET DE PHYSIOLOGIE COMPAREE, 8 coloured plates.
- SERRE, M.—TRAITE SUR L' ART DE RESTAURER LES DIFFORMITES DE LA FACE, 30 plates.
- MOREAU'S MIDWIFERY, 80 plates.
- RAYER, P.—TRAITE DES MALADIES DES REINS, 60 coloured plates.
- RAYER, P.—MALADIES DE LA PEAU, 22 coloured plates.
- DONNE, A.—COURS DE MICROSCOPIE COMPLEMENTAIRE DES ETUDES MEDICALES, ANATOMIE MICROSCOPIQUE, ET PHYSIOLOGIE DE FLUIDES DE L'ECONOMIE, 20 plates.
- BELL, CHARLES —ILLUSTRATIONS OF THE GREAT OPERATIONS OF SURGERY, TREPAN, HERNIA, AMPUTATION, ANEURISM, AND LITHOTOMY, 20 coloured plates.
- HUNTER, WILLIAM —ANATOMY OF THE HUMAN GRAVID UTERUS, 34 plates.
- HIND, G. W.—A SERIES OF 20 PLATES, ILLUSTRATING THE CAUSES OF DISPLACEMENT IN THE VARIOUS FRACTURES OF THE BONES OF THE EXTREMITIES.
- BLOXAM, W.—SURGICAL ANATOMY OF THE ARTERIES, 12 coloured plates.
- BOIVIN et DUGES.—TRAITE PRATIQUE DES MALADIES DE L'UTERUS, 41 coloured plates.
- BONAMY et BEAU—ATLAS D'ANATOMIE DESCRIPTIVE DU CORPS HUMAIN—Vol. 1 published, containing 82 coloured plates.
- LEURET.—ANATOMIE COMPAREE DU SYSTEME NERVEUX—2 Nos. published, to be completed in 4 Nos with 33 coloured plates.
- DELPECH, J.—DE L' ORTHOMORPHIE, PAR RAPPORT A L' ESPECE HUMAINE, 78 plates.
- QUAIN'S ANATOMICAL PLATES, 200 plates, plain or coloured.
- RAYER ON DISEASES OF THE SKIN, 40 coloured plates.
- PANCOAST'S OPERATIVE SURGERY, 80 plates.
- HOPE'S PATHOLOGICAL ANATOMY, 48 coloured plates.

 Catalogues of their entire stock may be had on application at their store.

MOTT'S VELPEAU.

NEW ELEMENTS OF OPERATIVE SURGERY:

By ALF. A. L. M. VELPEAU.

Professor of Surgical Clinique of the Faculty of Medicine, of Paris, Surgeon of the Hospital of La Charité, Member of the Royal Academy of Medicine, Institute, &c.

Carefully Revised, Entirely Remodelled, and Augmented with

A TREATISE ON MINOR SURGERY.

ILLUSTRATED BY OVER TWO HUNDRED ENGRAVINGS, INCORPORATED WITH THE
TEXT: ACCOMPANIED WITH AN ATLAS IN QUARTO OF TWENTY-
TWO PLATES, REPRESENTING THE PRINCIPAL OPERATIVE PROCESSES, SURGICAL INSTRUMENTS, &c.

TRANSLATED BY

P. S. TOWNSEND, M. D.

LATE PHYSICIAN TO THE SEAMAN'S RETREAT, STATEN ISLAND, NEW YORK.

*Augmented by the addition of several hundred pages of entirely new matter, comprising all the latest improvements and discoveries in Surgery, in America and Europe, up to the present time.
Under the supervision of, and with
notes and observations by*

VALENTINE MOTT, M. D.

Professor of the Operations of Surgery, with Surgical and Pathological Anatomy, in the University of New York; Foreign Associate of the Académie Royale de Médecine of Paris, of that of Berlin, Brussels, Athens, &c.

3 VOLS. 8vo.

"It is sufficient to say, in relation to this magnificent work, that it has superseded every other that has been published on this important scientific subject. The name and reputation of this distinguished author leave us little more than to welcome his masterly production into the literature of our science; and to congratulate the profession that such a man still lives to adorn and illustrate its history. As a complete record of all the discoveries and new operations, this work will be the best book for the beginner, and a sure guide for the old and experienced surgeon. The American appendix is a valuable addition to the work: it contains the experience of our great American surgeon, Dr. Mott, whose recorded labors, in addition to those of M. Velpeau, have brought Operative Surgery to its highest perfection up to the present time."—*New Orleans Medical Journal.*

"A magnificent undertaking it is, redounding to the honor of the indefatigable translator, whose perseverance is creditable to the country. He has given to the profession of the United States a grand system, emanating from a source at once commanding the confidence and the respect of all who practise surgery. When the fact is known that this massive series of three octavos are illustrated by over two hundred engravings, incorporated with the text, accompanied by an Atlas in quarto, of twenty-two plates, representing the principal operative processes, instruments, &c., it will be acknowledged that it embraces the entire domain of surgery, from alpha to omega, and must be considered as an unrivalled production."—*Boston Medical Journal.*

"This work is, beyond all comparison, the most thorough, systematic, and philosophical exposition of all that pertains to Operative Surgery, that has ever yet appeared. It has already served as the groundwork for numerous systems and manuals of more or less note; and it is destined to hold its present rank among the

classical literature of the profession, and as a book of continual reference in the hands of practical surgeons, long after these systems and manuals have been forgotten.

"Dr. Mott's contributions to this great work of M. Velpeau add much to its value as a book of reference, and that in the whole circle of surgical literature there is no one book which we can more heartily recommend than this, to both student and practitioner, for all that relates to Operative Surgery."—*New York Journal of Medicine*.

"This is unquestionably the master work on surgery of the present day; and we doubt not that it will be viewed as such by the profession. We feel assured that no physician will henceforth consider his library complete without it."—*New York Courier and Enquirer*.

"Few men, in any science or art, have contributed more of really practical and applicable improvement to the subjects they have treated, than Professor Velpeau.

"Sincerely may we congratulate students upon the possession of such a text-book, and earnestly do we recommend it to them as the very best guide to a thorough knowledge of practical surgery in the languages."—*Southern Journal*.

"Of all the works that have ever been published on General and Operative Surgery, this, by the great master-surgeon of Paris, must universally be admitted to be the most complete and perfect; we know of no other that can compete with it."—*New York Evening Post*.

"M. Velpeau is the most indefatigable and reliable medical compiler in Europe, to whatever department of the science he may for the time direct his attention. For all, therefore, that pertains to the 'History' of Surgery he was qualified, and we are now prepared to say, having for some time been possessed of the complete original work, that our author has herein left little to be supplied."—*Buffalo Medical Journal*.

"The Operative Surgery of Velpeau is conceded on all hands to be a work of vast labor and research, and in the highest degree creditable to the author; and the numerous and valuable additions by Dr. Mott, render it still more complete as a book of reference on most, if not all, of the subjects demanding operations, both as to the propriety of resorting to the knife, and the various and most approved methods of proceeding.

"The various subjects are treated of at great length, particularly operations on the large arteries, and excisions of bones, in which Dr. Mott's operations, their importance, originality, mode, &c., are particularly dwelt upon."—*Medical Examiner*.

"We take it for granted, that the work will speedily find a place in the library of every medical man, who has the slightest ambition to keep pace with the progress of surgical pathology and practice.

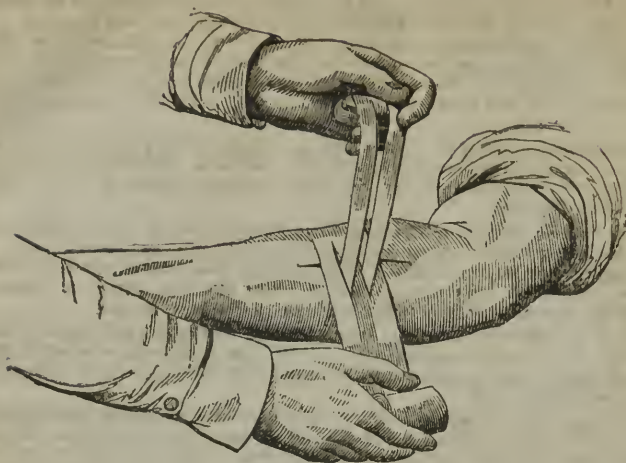
"We need not add, that there is no work in the English, or, we believe, any other language, which presents so full and satisfactory an account of the present state of surgical art and science, as that of M. Velpeau, as translated by Townsend, and enlarged by Mott. The additions of the learned and accomplished translator are extensive and valuable, and the illustrative plates are in the best style of the art."—*New York Journal of Medicine*.

"The publication is one of very great worth, and the profession is under lasting obligations to Dr. Townsend for the service he has rendered to surgical science, in putting this work of Velpeau in an English dress; and to Dr. Mott for the many valuable contributions from his own extensive experience with which this edition is enriched."—*Medical Examiner*.

"We really know of no work, upon any of the kindred subjects of medical science, more truly valuable to the student, as well as the general reader, than the one under consideration.

"The volume now before us [the third] is replete with interest of the highest order.

"Were the work one less generally known, we might feel urged to plead its cause before the public. But who has need of an introduction to Velpeau and Mott? The earliest beginner will scarcely have turned over the first page of his medical studies, before he will have made their acquaintance. The wisest of our sages willingly listen to the opinions of such men, and all of us concur in rendering to them the just meed of admiration and respect."—*Southern Journal of Medicine and Pharmacy*



Specimens of Illustrations.—Bandages.



Excision and Disarticulation of the Lower Jaw.



Dr. Mott's Case of Ligature of Arteria Innominate.

Dr. Townsend's Case of Sebaceous Tumors of the Nose.



Likeness of Russell's Face and Nose a few days before the operation.



Likeness of Russell's Face and Nose three weeks after the operation.

S. S. & W. Wood's Medical Catalogue.

THE FIRST LINES OF THE
THEORY AND PRACTICE OF SURGERY;
INCLUDING THE
PRINCIPAL OPERATIONS.

BY SAMUEL COOPER,

Senior Surgeon to University College Hospital, and Professor of Surgery in the
same College, etc.

WITH NOTES AND ADDITIONS,

BY WILLARD PARKER, M.D.,

Professor of Surgery in the College of Physicians and Surgeons in the
University of the State of New York, etc., etc.

2 vols. 8vo.

"We were delighted to see this new and beautiful edition of our old friend Cooper's 'First Lines.' The last (seventh English) edition had received from Mr. Cooper most of those additions which the modern improvements of Surgery had rendered necessary, and under the finishing hand of Dr. Parker, it is now made complete. The names of S. Cooper and Parker are alone a sufficient guarantee of the value of the volumes."—*Buffalo Medical Journal*.

"The work of Samuel Cooper, having passed through seven English and four American editions, requires no commendation to insure the present edition an early sale. It abounds in accurate principles and practical precepts, the result of extensive experience and careful observation; and although the able author may have imbibed errors, and committed mistakes, yet these are as few as commonly appertain to similar works.

"Professor Parker has not considered it necessary to make very numerous additions to Mr. Cooper's work, but we can safely say, that those which have been made are highly judicious, and in no small degree enhance the value of the original work."
—*Western Lancet*.

LECTURES ON NATURAL AND DIFFICULT PARTURITION.

BY EDWARD WILLIAM MURPHY, A.M., M.D.

PROFESSOR OF MIDWIFERY, UNIVERSITY COLLEGE, LONDON; OBSTETRIC
PHYSICIAN, UNIVERSITY COLLEGE HOSPITAL; AND FORMERLY
ASSISTANT PHYSICIAN TO DUBLIN LYING-IN-HOSPITAL.

1 vol. 8vo.

Illustrated by seventy engravings; of which the following are specimens.



Ovate Pelvis with Lateral Curvature of Spine.

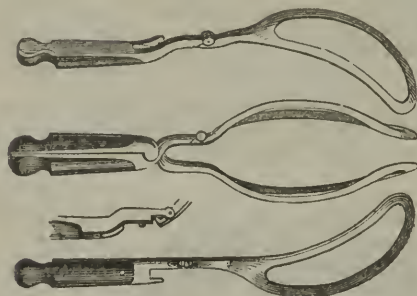


Cordiform Pelvis with Curvature backwards in a Child.

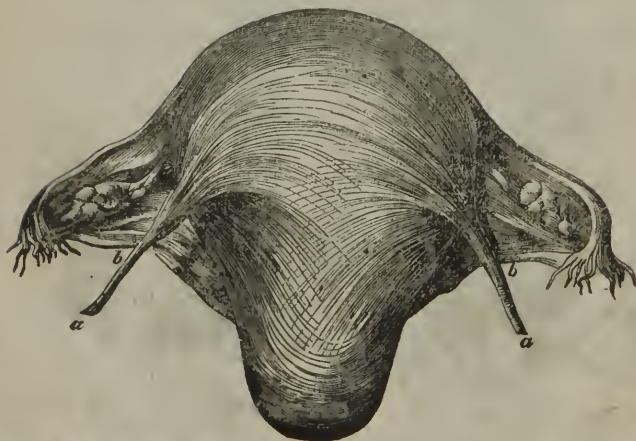




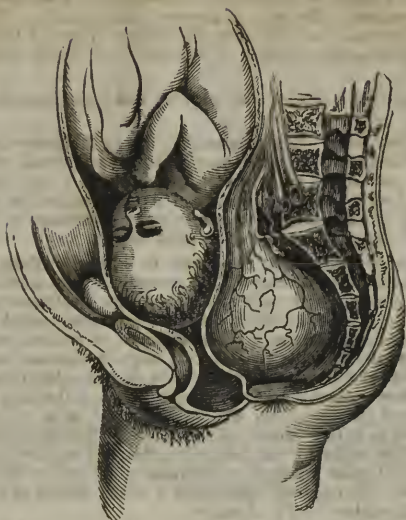
Anterior Curvature of the Spine, with a singular deformity of the Pelvis.



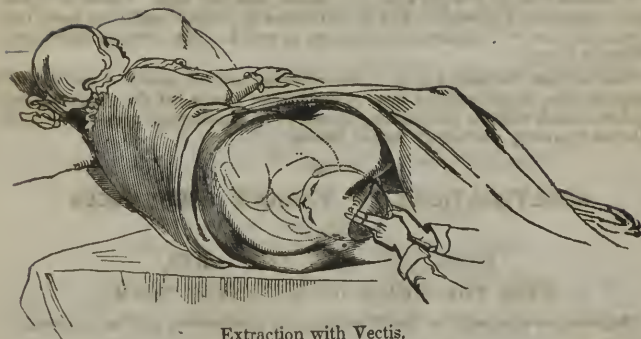
Dr. Davis' Forceps.



Muscular Fibres on the External Surface of the Uterus, terminating in the round ligaments a.



Ovarian Tumor.



Extraction with Vectis.

"This is a very excellent treatise on Obstetrics."—*American Journal of Medical Sciences.*

"It has high claims upon the attention of the profession; even old practitioners may consult its pages with profit.

"We know of no work which we can so heartily commend to the student, and to the accoucheur in active practice as that which constitutes the subject of this brief notice."—*Southern Journal of Medicine and Pharmacy.*

"The author writes like one thoroughly acquainted with the literature and practice of this branch of the profession; and the work must certainly be regarded as a most excellent one of its kind. The view of the author seems to be to condense within a moderate compass the great mass of materials furnished by other and more voluminous works."—*New Orleans Medical and Surgical Journal.*

"The subjects are well chosen, and suitably arranged; covering all the ground

S. S. & W. Wood's Medical Catalogue.

usually embraced in a course of lectures on obstetrics, all of which are presented in a clear and forcible manner. The style is luminous and readable. Throughout, the work is illustrated by wood-cuts exhibiting the different stages of labor, the organs involved, and the instruments employed in delivery."—*St. Louis Medical and Surgical Journal*.

"The student will find it replete with accurate and lucid instruction."—*London Medical Gazette*.

"This is an excellent book. It is commended to us by the position and rich practical experience of the author. It is comprised within limits which will not exhaust while it improves, and is not so expensive as to make it a very serious question whether it shall be bought or not. It consists of thirteen lectures, on very important matters; embracing, in short, what it behooves every practitioner to know, and to know thoroughly."—*Boston Medical and Surgical Journal*.

"The lectures are the substance of those given by Professor Murphy on the subject of Natural and Difficult Parturition, in University College, London. The subject is one deeply interesting both to the student and older practitioner, and we do not know of any book in English in which they will find them treated of at as much length, and in so practical a manner. The mechanism of parturition, the keystone of correct operative midwifery, is detailed with singular clearness and perfection. The chapters on Natural Labor leave nothing to be desired, while those on Difficult Parturition—and how embarrassing, how wearying cases of this kind are, every one engaged in obstetrical practice but too well knows—seem to us to supply fully the wants of the student, as to their causes and the remedy. Nor are the rules to be observed in the use of the perforator and forceps less clear and valuable, while the summary of principles and rules, arranged as aphorisms, at the end of the volume, completes its usefulness. We earnestly recommend it to the learner as the monograph, *par excellence*, on the subject."—*The Annalist*.

"As an elementary treatise on the Obstetric art, and as a text-book for students, we are of opinion that Dr. Murphy's Lectures should rank very high. The style is plain, simple, concise, and agreeable; and the principles of practice taught are based upon an enlarged view of the philosophy of the art, as well as ample practical experience."—*Western Lancet*.

These Lectures "contain a large amount of sound practical matter. From a careful perusal of them, we feel satisfied that not the student merely, but also the practitioner, may derive much valuable information, conveyed in a pleasing and unassuming style."—*Dublin Quarterly Journal of Medical Science*.

ADULTERATIONS OF VARIOUS SUBSTANCES

USED IN

MEDICINE AND THE ARTS,

WITH THE MEANS OF DETECTING THEM;

Intended as a manual for the Physician, the Apothecary, and the Artisan.

BY LEWIS C. BECK, M.D.,

Professor of Chemistry in Rutgers' College, New Jersey, and in the Albany Medical College;
Honorary Member of the Medical Society of the State of New York, etc.

"A treatise of this kind has been much wanted in this country, both by the Druggist and Manufacturer.

"Dr. Beck appears to have collected all that is important, and has presented the information thus obtained from the best authorities, in a clear yet succinct form, so as to enable any one conversant with the general principles of Chemistry to apply it with advantage.

"The work is altogether well suited for the purposes for which it was designed, and cannot fail to be extremely useful to all classes of the community, and we trust will not as a check to the knavery and cupidity of the many sophisticators, unfortunately so numerous, both here and elsewhere."—*Am. Journal of Med. Sciences*.

"It is equally needed by the physician and his patients; indeed, its main aim, if properly employed, will be to reduce the latter class of persons."—*Albany Argus*.

"The appearance of this work is really a most important event to the medical profession in this country. In times past the physician could trust, to some extent at least, the safety of his patient, and his own reputation, to the apothecary from whom he bought his medicines, or who put up his prescriptions. These things have, however, now undergone an important change; adulterations of medicinal substances are now practised to such an extent as to deprive therapeutics of much of that certainty which it promises when the medicinal articles employed are of the best quality. Hardly any article of the *Materia Medica*, of much commercial value, is now sold, which may not be said to be generally adulterated.

"To such physicians as desire to make examinations readily and satisfactorily, this work will be a great desideratum. To apothecaries it may be considered as an almost absolute requisite."—*New Orleans Med. and Surg. Journal*.

"This little volume contains a list of all the substances used in medicine and the arts, arranged in alphabetical order, with a copious index for the convenience of easy reference. Under each article is its natural history, the characteristics of the best specimens, and its behavior towards certain reagents, also the impurities found in the commercial varieties, with the means of removing them; next come the various adulterations practised upon the article, with the best method of detecting each.

"It is, in a word, a useful work to the physician, the apothecary, and all who are engaged in the purchase and sale of drugs, dye-stuffs, &c."—*Southern Journal*.

"This is a neatly gotten up book, and one calculated to be useful. The subjects are arranged alphabetically; and to assist the reader in his examination of the work, it has a copious table of contents in front, and closes with a very full index. We believe that every medical man will derive instruction and profit from its perusal."—*Western Lancet*.

THE PRESCRIBER'S PHARMACOPŒIA,

CONTAINING

ALL THE MEDICINES IN THE LONDON PHARMACOPŒIA;

Arranged in classes according to their action, with their Composition and Doses.

BY A PRACTISING PHYSICIAN.

Altered to correspond with the United States Dispensatory.

REVISED AND IMPROVED

BY AN AMERICAN PHYSICIAN.

Second American from the third London Edition.

"It is a capital table book for the physician, enabling him to select the best prescription after a few minutes' examination. The formulæ are drawn from the best authorities. In the appendix there is a table of antidotes of the more common poisons, a classified list of the most famous mineral waters in our country, with a chemical analysis of each, with several other interesting notices."—*Albany Argus*.

"The young physician, and even the old one, whose memory may be treacherous, in retaining the composition and doses of the various miscellaneous drugs, which he is daily called on to prescribe, will find this a useful pocket memento, easy of reference. At the end of the volume is a table of poisons, with their antidotes, and the immediate treatment to be adopted, which is very convenient from its brevity and clearness."—*Southern Journal*.

"This is a pretty little pocket volume, containing all the medicines in the London Pharmacopœia, arranged in classes according to their action, with their composition and doses, by a Practising Physician, altered to correspond with the United States Dispensatory, revised and improved by an American Physician. The second edition from the third London. The American editor has most wisely introduced the uses of

medicines, and thus supplied a defect which appeared in the English edition, and added materially to the usefulness of the work.

"The medicines are arranged in classes, according to their general therapeutic action. The officinal preparations, their compositions, doses, and uses, are given, and a most convenient little work is thus afforded, to be used either as an aid to failing memory, or as suggestive of a remedy upon occasion, as need may be.

"Nor is this all; an excellent table of poisons and counter-poisons appears in the work, together with the temperatures of baths, proportions of Opium, Mercury, Arsenic, and Antimony in some of the stronger preparations of the Pharmacopœia, a table of doses according to age, analysis of mineral waters, including those of this country, the proportions of alkalies and acids required for making saline draughts, and a copious index. Altogether, it is a very useful *vade mecum*, a true *multum in parvo*, and cannot, we should suppose, fail to be more popular than ever."—*The Annalist*.

"This is a very convenient and useful pocket companion, for medical pupils and young practitioners."—*Western Lancet*.

THE ANATOMICAL REMEMBRANCER, OR COMPLETE POCKET ANATOMIST :

CONTAINING

A concise description of the Bones, Ligaments, Muscles, and Viscera; the distribution of the Nerves, Blood-Vessels, and Absorbents; the arrangement of the several Fasciæ; the Organs of Generation in the Male and Female; and the Organs of the Senses.

FROM THE SECOND LONDON EDITION, REVISED.

"It contains a concise description of the Bones, Ligaments, Muscles and Viscera; distribution of Nerves, Blood-vessels, and absorbents; arrangement of the several Fasciæ: Organs of Generation, Male and Female, and the Organs of the Senses. The usefulness of such a volume to the medical student especially during dissections, to the practical surgeon at all times, and scarcely less so to the physician, is too obvious to require amplification. Anatomy lies at the foundation of medical and surgical science, and the practitioner of some years' standing cannot but have learned, by experience, the necessity of frequently refreshing his memory with anatomical details, if he would have them ready at his command when it is important to recall them for practical application. The 'Remembrancer' is adapted to this object, and every medical man, as well as pupil, would do well to have it on his table."—*Buffalo Medical Journal*.

"This is, to the student, a valuable little treatise. The descriptions are concise, but accurate; and the whole subject is presented in such a condensed form that it will afford a very material aid to the memory in recalling those points which may not be clearly retained. Anatomy is, to a great extent, a mere matter of memory, and hence a 'Remembrancer' is more useful in this department than in any other connected with medical studies. This work was compiled with a view of preparing students for examinations at the Royal College of Surgeons; but it is equally well adapted to the uses of American students, and will no doubt be freely used by them."—*Western Lancet*.

"The remarks respecting it in the London Medical and Surgical Journal, convey correct ideas of what the work is: 'It contains but 250 pages, and is really an anatomical *multum in parvo*.'"—*New Orleans Med. and Surg. Journal*.

"It will be found of great assistance to those who frequent the dissecting room, or are desirous of renewing the knowledge they have acquired at so late a former period. Auxiliaries of the memory are frequently offered to the student, but they seldom present the merits of this. It is strictly a pocket companion in form, and on the subject of which it gives concise and still accurate information, enabling us to recover in a moment that which memory may have lost."—*Southern Journal of Medicine*.

"The anatomy is correctly given, and the descriptions, though condensed to the very highest degree, still remain clear and intelligible."—*Lancet*.

THE INFLUENCE OF TROPICAL CLIMATES ON EUROPEAN CONSTITUTIONS.

BY JAMES JOHNSON, M.D.,

PHYSICIAN TO THE LATE KING, ETC.

AND JAMES R. MARTIN, Esq.

LATE PRESIDENCY SURGEON, AND SURGEON TO THE NATIVE HOSPITAL, CALCUTTA.

From the Sixth London Edition, with Notes by an American Physician.

"Of the comparatively few medical books, among the many with which the press teems, destined to survive the changes incident to progressive advancement in science, the celebrated work on Tropical Climates, by Dr. Johnson, the late distinguished editor of the *Medico-Chirurgical Review*, is a prominent example. Although relating to circumstances belonging to tropical climates, it abounds in observations which are applicable to every locality, and hence, is by no means of interest exclusively to those who inhabit the torrid zone. The peculiar ability and tact of Dr. Johnson as a writer, are sufficiently well known. Probably no writer in the medical profession of the present age has been so universally esteemed by medical readers. We can recall with vividness the interest with which we perused this work many years ago, and we shall avail ourselves of the earliest leisure to repeat the gratification. The additions of Dr. Martin contain valuable information respecting the diseases of warm climates and enhance the interest and usefulness of the work."—*Buffalo Medical Journal*.

"We are gratified to see this American edition; and to those who have not already studied it, we would say, do so at once. Any physician, however elaborate may have been his studies, will be instructed by carefully examining its doctrines. Many of Dr. Johnson's observations are original: and the whole is so well arranged, and clothed in such a beautiful style, that every reader must be pleased and instructed."—*Western Lancet*.

"Who has not read 'Johnson on Tropical Climates?' And where is the southern physician, in whose library, be it ever so scant, it has not occupied the place of a *text-book*? Written in the animated and fascinating style peculiar to its young, talented and enthusiastic author—abounding in bold and novel observations, carefully made in the dangerous field of *actual service*—and combining, moreover, admirable critical analyses of the ablest productions on tropical diseases; the work was everywhere welcomed with gladness, and devoured almost with the eagerness of a romance.

"This work, the favorite production of his younger days, first gave Dr. Johnson notoriety and a name; but we deem it far from being the most valuable of his labors. It is as the founder of the *Medico-Chirurgical Review*, his great ability as a critic, and his indefatigable efforts as a journalist, that Dr. Johnson has done the most good, and will be longest remembered."—*New Orleans Med. and Surg. Journal*.

"Dr. Johnson seems to be enthusiastic in his profession; has spent a great part of his life in tropical climates in both hemispheres; has observed well and practised successfully; and now, in presenting the result of his personal experience to the public, has published a volume abounding in practical knowledge, which we recommend in the strongest manner to the attention of the profession, and indeed to every person going to tropical climates, on account of the very valuable observations which interest the soldier, the sailor, and the merchant, as much as the physician."—*Edinburgh Medical and Surgical Journal*

"Dr. James Johnson has the distinguished merit of having written the best, by far the best book on the diseases of warm climates. He not only presents every important fact, but boldly draws original and satisfactory conclusions, and thereby lays down admirable rules for both the prevention and cure of diseases incident to tropical regions."—*Annals of Medicine*.

"In no work do we remember to have seen the important subject of preserving Health in Tropical Climates so ably, so clearly and so philosophically treated."—*New Med and Phys. Journal*.

CHANGE OF AIR,
OR THE
PHILOSOPHY OF TRAVELLING;

BEING AUTUMNAL EXCURSIONS THROUGH FRANCE, SWITZERLAND, ITALY
GERMANY, AND BELGIUM; WITH OBSERVATIONS AND REFLECTIONS
ON THE MORAL, PHYSICAL, AND MEDICINAL INFLUENCE OF
TRAVELLING EXERCISE, CHANGE OF SCENE, FOREIGN
SKIES, AND VOLUNTARY EXPATRIATION.

To which is Prefixed,
WEAR AND TEAR OF MODERN BABYLON,
BY JAMES JOHNSON, M.D.,
PHYSICIAN EXTRAORDINARY TO THE KING.

"To attempt an analysis of a work embracing such a treasure of anecdote and instruction would be worse than an idle task; we must therefore content ourselves with observing that, of all the popular tours, of which British literature has been recently so prolific, this is immeasurably the best, whether we consider it in point of style or details. There is no class of general readers which may not derive pleasure and profit from its perusal; while to the physician, it will prove very useful, whether as to his guidance in the selection of suitable residences, or routes for patients seeking the renovation of health—or, as to the history of those diseases which the malarious atmosphere of Italy, or the Alpine blasts of Switzerland too frequently inculcate."—*Ballou*.

"Candor requires us to admit that the present publication is the most entertaining, and at the same time edifying, that has issued from the press for many years. We have no hesitation in saying that the medical, as well as the general reader, will find every chapter crowded with interesting and instructive matter."—*Gazette of Practical Medicine*.

"To travellers and invalids it is an amusing, instructive, and invaluable companion. It is impossible to dip into any part of it, without having the attention riveted and the fancy pleased. Of this production we need only say, that it is worthy of the accomplished author. It is written with elegance, accuracy, and an impartial spirit of philosophy; and will add to his high literary and professional reputation. Had he written but this volume, he would have ranked among the best topographical writers of the day; for his descriptions 'of men, manners, and countries' are seldom equalled—hardly ever surpassed. It is one of the most interesting publications which modern times have produced."—*London Medical and Surgical Journal*.

"There is much that is eminently curious and striking in this volume to the invalid, the tourist, the moralist, the philosopher: and on the subject of health in particular, it deserves to be not only consulted, but studied, by every person, sound or unsound, previously to the undertaking of a journey to Italy."—*La Belle Assemblée*.

AN ESSAY ON INDIGESTION;

OR, MORBID SENSIBILITY OF THE STOMACH AND BOWELS, AS THE PROXIMATE CAUSE, OR CHARACTERISTIC CONDITION OF
Dyspepsy, Nervous Irritability, Mental Despondency, Hypochondriasis,
and many other Ailments of Body and Mind.

TO WHICH ARE ADDED,

*Observations on the Diseases and Regimen of Invalids on their return from
hot and unhealthy climates.*

BY JAMES JOHNSON, M.D.,
Of the Royal College of Physicians. Author of the *Influence of Tropical Climates on European
Constitutions*; and Editor of the *Medico-Chirurgical Review*, etc.

S. S. & W. Wood's Medical Catalogue.

"Dr. Johnson is already so well known to the public, as the author of an eloquent treatise on the influence of tropical climates on European constitutions, and by the learning and diligence with which he conducts our contemporary, the *Medico-Chirurgical Review*, that we merely deem it necessary to assure our readers of his identity with the name subscribed to the present essay. It is brief and to the purpose; and we may safely aver that he is throughout enlightened, consistent, and precise; that his remedial means are energetic; and that every line of his work displays the activity of a powerful and penetrating mind, always on the alert to profit by the discoveries of the day, and felicitous in the application of known facts to the illustration of the phenomena of disease, however obscure."—*Edinburgh Journal of Medical Science*.

It is a volume, small in size, but rich in matter; from the perusal of which every reader will derive instruction."—*Medical and Physical Journal*.

"It is, perhaps, almost a work of supererogation to recommend to the profession, the production of an author so well known and duly appreciated as is the editor of our respected contemporary, the *Medico-Chirurgical Review*; but we cannot refrain from expressing our obligations to Dr. Johnson for the pleasure and instruction we have received from the perusal of this little essay."—*Philadelphia Journal of the Medical and Physical Sciences*.

"It is full of clear details of what we believe to be the correct views of Dr. Johnson, concerning the nature and treatment of some of the most obstinate complaints, with which the physician is every day baffled, or the patient afflicted, tormented, and ultimately shuffled out of this mortal coil. We, therefore, most earnestly recommend it to our readers, as a treatise which they will be sure to peruse, if but for the pleasant style in which it is written; and sure to profit by, both as regards their own comfort, and the well-being of their patients."—*North American Medical and Surgical Jour.*

THE DUBLIN DISSECTOR;

OR MANUAL OF ANATOMY

BY ROBERT HARRISON, A.M., &c.

FIRST AMERICAN, FROM THE FIFTH ENLARGED DUBLIN EDITION.

WITH ADDITIONS

BY ROBERT WATTS, JR., M.D.,

Professor of Anatomy in the College of Physicians and Surgeons in the City of New York, &c., &c. 12mo.

"This important work is universally allowed to be the best on the subject extant; and the present edition derives additional value from the copious Notes and Illustrations by the American editor. A work of reference to the Medical Practitioner, and to the student an invaluable companion in the dissecting-room."—*Med. Chirurg. Review*.

"This admirable manual of practical anatomy has long been considered the best of its kind in the English language; and it is only necessary to add, that the present edition is the most valuable and convenient for the dissecting-room of any extant."—*Medical Review*.

"This re-modelled work is superior to any other now in use, and should be especially recommended to Medical Students as a most valuable and accurate guide."—*Boston Medical Journal*.

"We have long regarded the *Dublin Dissector* as the best manual with which we have been acquainted, for the use of students in the dissecting-room. And we are glad to see it reprinted in this city, and thus brought within the reach of all those amongst us who are engaged in anatomical studies. The present edition is enriched by the addition of a large amount of new matter, compiled from standard authors, or obtained from private sources, by which its value is greatly enhanced. We recommend the work with great confidence to all who wish to devote themselves to the practical study of anatomy."—*New York Journal of Medicine and Surgery*.

S. S. & W. Wood's Medical Catalogue.

**THE YOUNG STETHOSCOPIST,
OR, THE STUDENT'S AID TO AUSCULTATION.**

By HENRY I. BOWDITCH, M.D.

"This is an exceedingly clever little work—clear, concise, and to the purpose. We know of no work on the subject better adapted to the wants of the student who is just beginning the study of auscultation."—*Medical Examiner.*

"We are fully convinced that this work is well adapted to the wants of students, and that it supplies an obvious deficiency in the medical literature of our country. Plain and simple in its arrangement, accurate in details, and sufficiently extensive for elementary purposes, it should become the companion of every student of auscultation."—*Western Lancet.*

**A MANUAL OF PERCUSSION AND AUSCULTATION,
COMPOSED FROM THE FRENCH OF
MERIEDEC LAENNEC.**

By JAMES BIRCH SHARPE, M.R.C.S.

Author of Elements of Anatomy—designed for the use of Students in the Fine Arts.

**OBSERVATIONS ON THE UTILITY AND ADMINISTRATION
OF PURGATIVE MEDICINES IN SEVERAL DISEASES.**

By JAMES HAMILTON, M.D.

Fellow of the Royal College of Physicians, of the Royal Society of Edinburgh, Senior Physician to the Royal Infirmary of that city, and Corresponding Member of the Medical Lyceum of Philadelphia.

1 VOL. 8vo.

**THE MEDICAL REMEMBRANCER,
OR BOOK OF EMERGENCIES.**

IN WHICH ARE CONCISELY POINTED OUT

THE IMMEDIATE REMEDIES TO BE ADOPTED IN THE FIRST MOMENTS OF DANGER FROM POISONING, DROWNING, APOPLEXY, BURNS, AND OTHER ACCIDENTS, WITH THE TESTS FOR THE PRINCIPAL POISONS, AND OTHER USEFUL INFORMATION.

By EDWARD B. L. SHAW, M.R.C.S. & L.A.S.

One of the Surgeons to the Royal Humane Society, and Assistant Apothecary to St. Bartholomew's Hospital.

Revised and Improved by an American Physician.

A CONSPECTUS OF THE PHARMACOPŒIAS

OF THE LONDON, EDINBURGH, AND DUBLIN COLLEGES OF PHYSICIANS.

AND OF THE UNITED STATES PHARMACOPŒIA.

Being a Practical Compendium of Materia Medica and Pharmacy.

By A. T. THOMSON, M.D., F.L.S.

Fellow of the Royal College of Physicians, Professor of Materia Medica and Therapeutics in University College, London, &c.

EDITED BY CHARLES A. LEE, M.D., PROFESSOR OF GEN. PATHOLOGY AND MATERIA MEDICA IN GENEVA MEDICAL COLLEGE.

Third American, from the thirteenth English Edition. Much enlarged and improved.

A MANUAL OF CHEMISTRY.]

BY RICHARD D. HOBLYN, A.M.,

AUTHOR OF A "DICTIONARY OF TERMS USED IN MEDICINE AND THE
COLLATERAL SCIENCES."

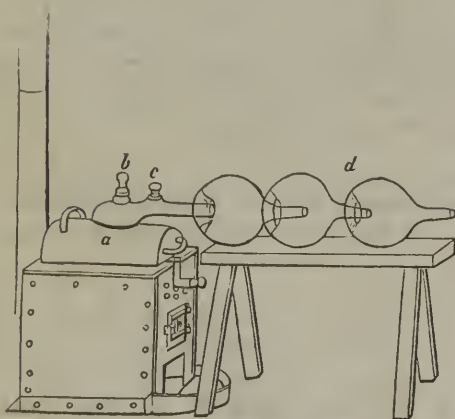
"The work is tersely written, and with so much conciseness, that a great amount of matter is comprised in comparatively a few pages. We know, indeed, of no work on the same subject that contains so clear and comprehensive an account of the principles of Chemistry, within anything like so brief a space."—*Medical Examiner*.

"This little work presents a compendium of the fundamental principles and facts of chemical science, intended to serve as an introduction to more elaborate works, and for convenience of reference. The author is favorably known to the profession of this country by his Medical Dictionary, lately republished under the editorship of Isaac Hayes, M.D. The present work is well suited to fulfil the objects for which it was prepared."—*Buffalo Medical Journal*.

"It is a concise, and we think usually accurate treatise, embodying everything essential for a correct outline of the subject, and as such is eminently entitled to the attention of the student."—*Western Lancet*.

"In descriptions somewhat parenthetical, yet clear, the author contrives to communicate a great deal of information to the learner in a small space."—*Bulletin of Medical Science*.

"A truly valuable little manual, with a modest title, by the author of the 'Dictionary of Terms used in Medicine.' It is comprehensive, and yet by no means tedious."—*Boston Medical and Surgical Journal*.



S. S. & W. Wood's Medical Catalogue.

**A TREATISE ON THE DISEASES OF THE CHEST,
AND ON MEDIATE AUSCULTATION.**

BY R. T. H. LAENNEC, M.D.,

Regius Professor of Medicine in the College of France, Clinical Professor to the
Faculty of Medicine of Paris, &c., &c., &c.

TRANSLATED FROM THE THIRD FRENCH EDITION.

WITH COPIOUS NOTES, A SKETCH OF THE AUTHOR'S LIFE, AND AN EXTENSIVE
BIBLIOGRAPHY OF THE DIFFERENT DISEASES.

BY JOHN FORBES, M. D., F. R. S.,

Member of the Royal College of Physicians, Physician to the Chichester Infirmary,
and Physician in ordinary to his Royal Highness the Duke of Cambridge.

TO WHICH ARE ADDED THE NOTES OF

PROFESSOR ANDRAL,

*Contained in the fourth and latest French edition, translated and accompanied with
observations on Cerebral Auscultation.*

BY JOHN D. FISHER, M. D.,

Fellow of the Massachusetts Medical Society.

With Plates.

"It would be a superfluous task to offer an analysis of the immortal work of Laennec, or to praise the excellent translation by Dr. Forbes; both have been long before the profession, both are justly esteemed. We wish simply to announce the new edition with the translated notes by Professor Andral, and to express our conviction, that the work, in its present improved form, is by far the most complete work in our language on the diseases of the chest."—*New York Journal of Medicine.*

"It is of matchless excellence in its matter, and it has been excellently translated. We cannot conclude without recommending it to our readers in the strongest terms, and for the third time, but we hope not the last, as the most comprehensive and valuable work which has ever been published on the pathology and diagnosis of Diseases of the Chest."—*Medico-Chirurgical Review.*

**PORTRAITS OF THE MEDICAL FACULTY
OF THE UNIVERSITY OF NEW YORK:**

Containing Portraits of

CHANCELLOR FRELINGHUYSEN, AND PROFESSORS MOTT, PATTISON,
REVERE, PAINE, BEDFORD, AND DRAPER.

On one Sheet 30 by 24 inches.

**PORTRAITS OF THE FACULTY OF THE COLLEGE OF
PHYSICIANS AND SURGEONS**

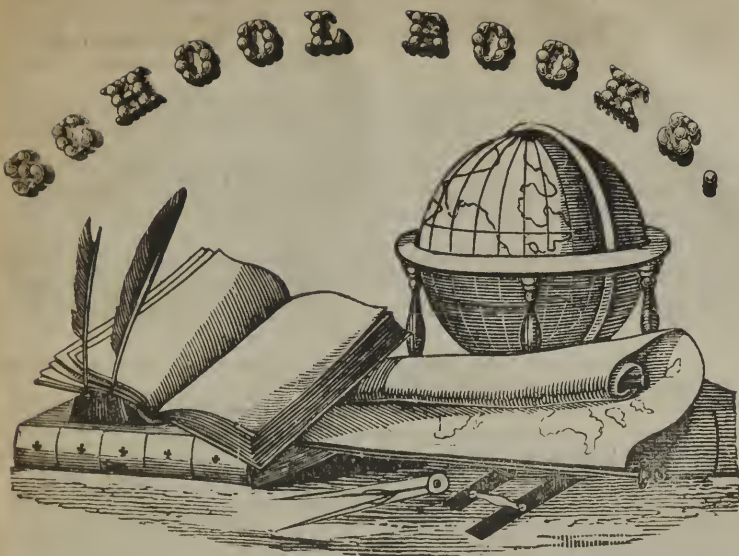
OF THE UNIVERSITY OF THE STATE OF NEW YORK:

Containing Portraits of

PROFESSORS STEVENS, SMITH, BECK, TORREY, WATTS, PARKER, AND GILMAN.

On one Sheet, 30 by 24 inches.

*The above are beautifully executed on Stone, by Davignon, one of the best French
Lithographers, and may be had in sheets, on rollers, or in frames.*



**BROWN'S FIRST LINES OF ENGLISH GRAMMAR,
DESIGNED FOR YOUNG LEARNERS.
BROWN'S INSTITUTES OF ENGLISH GRAMMAR,
FOR THE HIGHER CLASSES.**

These Grammars have been adopted as Text Books in the Public Schools in Boston, New-York, Albany, and Buffalo; also in Phillips' Academy (the Seminary for Teachers) at Andover; in the Normal School at Lexington, Mass. and in many of the Academies and District Schools in various parts of the Country.

To those who have not had the opportunity to examine and judge for themselves of their merits, the following testimonials are submitted:

BOSTON, May 9, 1843.

The "Institutes" and the "First Lines of English Grammar," by Gould Brown, were adopted by the School Committee this day, to be used as Text-Books in the Public Schools of this City.

(Attest,) S. F. McCLEARY, *Secretary.*

In School Committee.

ROXBURY, June 19, 1843.

Ordered, That Gould Brown's "First Lines of English Grammar" be substituted in our Schools for the English Grammar now used there, and that the Teachers have liberty to use the large Grammar [Institutes] of the same author, in their first classes.

SAMUEL H. WALLEY, JR.

Gould Brown's "Institutes," and his "First Lines of English Grammar" have been adopted for the use of the Public Schools of this town.

REV. C. STETSON, *of the School Committee.*

MEDFORD, Mass., April 28, 1843.

Good Brown's Grammar is the most scientific and decidedly popular Grammar of the English language now extant. It has been recommended by several County Superintendents, and adopted by a majority of the common schools.
Rochester Evening Post, Aug. 1843.

This is a work which has stood the test of many years' experience in some of the best literary Institutions in the country.—*Albany Evening Jour., May 1843.*

Brown's Grammar has been gradually increasing in popularity until, as we understand, it is now used in more of the Academies and higher institutions in this country than any other.—*Albany Argus, May 1843.*

A work that is so highly recommended by Emerson, Griscom, Col. Stone, and such an array of Deputy Superintendents, must possess superior merit. Having examined the work ourselves, we are satisfied of its superiority, and give our voice for its introduction into our schools.—*Oswego Palladium, June 1843.*

We have examined them with some care; and cheerfully recommend them as the most valuable works of the kind we have seen.

Oswego County Whig, June 1843

SPELLING BOOKS.

YOUNG CHILD'S A, B, C, or First Book,
NEW-YORK PRIMER, or Second Book,
NEW-YORK PRECEPTOR, or Third Book,
NEW-YORK SPELLING BOOK, or Fourth Book.

"Their simplicity pleases me; it is a recommendation that they are not crowded with foreign and unnecessary matter. The progression from book to book is natural and easy, as is also the course from the beginning to the close of each."

SAMUEL L. MITCHILL, LL. D., F. R. S.,
Prof. of Chemistry in the University of the State of New-York.

"I do hereby certify, that, in my opinion, the above named books are well calculated to answer the intended purpose, which is the instruction of children."

BENJ. MOORE, D. D., *President of Columbia College.*

"The plan and arrangement are good, and fewer defects are perceivable than in most books which have come under my inspection."

JOHN BOWDEN, D. D.,
Prof. of Moral Philosophy, Logic, and Belles Lettres, Col. Col.

"Having carefully examined a set of books compiled and published by Samuel Wood, for the purpose of conducting children, by easy and gradual steps, to knowledge of the orthography of our language and to the art of reading, I am fully of opinion that they are well calculated to effect this important object in a manner which will prove generally more agreeable to the pupil, and more economical to the parent than most of the elementary books in common use."

JOHN GRISCOM, LL. D.

"We have examined the above set of books, and freely concur with John Griscom in sentiment on the same."

Benj. Clark,	Thomas Eddy,	J. Borland,	James H. Lyon,
R. Wiggins,	Wm. Smith,	James Mott,	Aaron Ely.
Joseph Moore,	R. Tolerton,	C. C. Andrews,	

"I am abundantly confirmed in my very favorable opinion of this little book."
(12)

(the New-York Spelling Book,) and most heartily wish it may soon become extensively known, and its ingenious author most liberally rewarded."

H. G. SPAFFORD.

"Nothing of the kind, which has previously come to my knowledge, is, in my opinion, equally proper and useful."

J. W. KELLOGG.

NEW-YORK EXPOSITOR, by RICHARD WIGGINS: to which is added a Vocabulary of Scientific Terms, by JOHN GRISCOM, LL. J.

The Dictionaries now in use, although valuable as books of reference to the advanced student, are unfit for Common Schools, containing many words which offend the ear of delicacy, and a large number which are not of frequent occurrence in ordinary intercourse, and which consequently burden the memory to the exclusion of more useful matter. The Compilers of the N. Y. Expositor have presented us a class book in which the above defects are avoided. The definitions combine *brevity* with *precision*, and the words are accentuated according to the best authorities.

READING BOOKS.

NEW-YORK READER, No. 1.

NEW-YORK READER, No. 2.

NEW-YORK READER, No. 3.

This series of Reading Books has been prepared with much care, by an experienced teacher, and is worthy the attention of teachers. The selections have been made with judgment, the sentiments thereof are pure, and the gradations in style easy.

"Without any thing of sectarianism, the lessons, from the commencement, inculcate the purest Christian morality, and are calculated to keep alive and to cherish, those scruples of *conscience*, which are the best conservatives of innocence, and the surest bulwarks against the encroachments of public and private immorality."

JOHN GRISCOM, LL. D.

"The whole series are what in this country have long been wanted, and are conducive to much improvement on the common plan of teaching young scholars. I shall not hesitate to recommend them to the schools within my precincts."

JOSEPH E. WEEDEN,

Com. School Visitor for Cattaraugus Co., N. Y.

"I have ever been in the habit of using the school books published by you, and shall continue so to do."

PIERPONT POTTER,

Dep. Sup. of Com. Schools, Queens County.

PUTNAM'S ANALYTICAL READER,

PUTNAM'S INTRODUCTION to do.

PUTNAM'S SEQUEL to do.

"I regard them as the most valuable books which I have examined, for the purpose of elementary instruction in the art of reading. The selections are characterised by great simplicity and felicity of arrangement; and the object, of all others most important, the making of language intelligible, a vehicle of thought, and an instrument of exciting and developing the powers of the youthful mind, seem to have been very happily attained."

REV. N. LORD, D. D.

President of Dartmouth College.

"We feel assured, from an inspection of these books, that they are better

HART'S GEOGRAPHICAL EXERCISES.

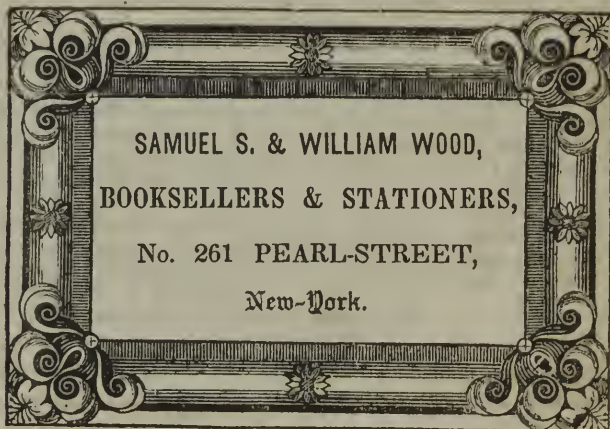
Extraneous and irrelevant matter is excluded from this work, and the pupil is at once directed to the Map as the true source of Geographical knowledge, as it necessarily fixes on the mind the location of the places designated, and thus impresses them permanently on the memory.

A TREATISE ON THE USE OF THE GLOBES, *Or a Philosophical View of the Earth and Heavens.*

Comprehending an account of the figure, magnitude, and motion of the earth; with the natural changes of its surface, caused by floods, earthquakes, &c. together with the principles of meteorology and astronomy; with the Theory of the Tides, &c. Preceded by an extensive collection of astronomical and other definitions; and illustrated by a great variety of Problems, Questions for the examination of the Student, &c. Designed for the Instruction of Youth. By Thomas Keith. Revised and corrected by Robert Adrain, LL.D., F.A.P.S., F.A.A.S., &c. and Professor of Mathematics in Rutgers' College in New-Brunswick. [This is one of the best and most comprehensive treatises on the Globes extant. No teacher should be without it.]

ARITHMETICAL TABLES. PERRIN'S FRENCH GRAMMAR.

THESE BOOKS ARE PUBLISHED BY



And are Sold by the Booksellers Generally.

S. S. & W. WOOD have an extensive assortment of Theological, Medical, Classical, School, and Miscellaneous Books—Blank and Account Books—Paper and Stationery of all kinds—which they offer at low prices, for cash or approved credit.

S. S. & W. W. are agents for the sale of Wilson's 9 and 13 inch GLOBES, and offer them at reduced prices. Also for sale, 3 and 6 inch Globes, finished in a superior style.

JOHNSON'S MEDICO-CHIRURGICAL REVIEW, AND JOURNAL OF PRACTICAL MEDICINE. (PUBLISHED QUARTERLY.)

ARRANGEMENT.

- 1.—Extensive Analytical Reviews of English and Foreign Medical Works.
- 2.—Quarterly Periscope of Practical Medicine; or Spirit of the Medical Journals, Foreign and Domestic.
- 3.—Periscope of Authenticated Hospital Reports, British and Continental, with Commentaries.
- 4.—Analecta; or, Gleanings from the Periodical Presses of Europe and America.
- 5.—Prize Hospital Reports, Metropolitan and Provincial.

The whole forming two large annual volumes of concentrated practical information in
MEDICINE, SURGERY, MIDWIFERY, PHARMACY, ETC.

REPUBLISHED

BY RICHARD AND GEORGE S. WOOD,

No. 261 PEARL STREET, NEW YORK.

Price, Five Dollars Per Annum, Payable in Advance.

A Work devoted exclusively to the interests of any one Profession, if it possesses merit, strongly recommends itself to every member of that profession; and as most of the improvements and discoveries in Medicine and Surgery are communicated through the medium of the Periodical Press, works of this kind are nearly as indispensable to the Physician or Surgeon, as a hammer to the Artist. None, therefore, who are not indifferent to the interests of their profession, or who wish to keep pace with the progress of knowledge in their own department, can, without disadvantage, be without such a work. This Journal having been reprinted and extensively circulated in this country for more than twenty years, is too well known to make it necessary to enlarge much upon its merits. The acknowledged talents of the author—the ability, the impartiality, and the justness of its notices of new publications; which, forming in general, a complete abstract or synopsis of the work reviewed, supersede, in a measure, the necessity of purchasing the works themselves—the wide range taken in collecting its reports of cases, which are gleaned from the extensive hospitals of Great Britain, Ireland, and the continent of Europe; offering to the young practitioner the advantages of the most extensive practice—and its selections from American Journals, by which it combines in some degree the advantages of a foreign and domestic journal, give it a claim to patronage possessed perhaps by no other similar work. In confirmation of this opinion, the following testimonials, from gentlemen of the highest respectability in the profession are submitted.

RECOMMENDATIONS.

Sir,—I consider the Medico-Chirurgical Review among the most important additions to the Medical Literature of the day. I have no doubt it has contributed very much to the improvement of Medicine, both in Europe and in America. It certainly will not suffer by a comparison with any similar work in either hemisphere; and I am happy to learn that you are engaged in continuing the publication of it in this country. Wishing you every success in this enterprise, I am, very respectfully, your obedient servant.

JOHN WATTS, Jr., Pres. of Coll. of Phys. and Surg., N. Y.

I consider the Medico-Chirurgical Journal as decidedly the most valuable periodical Medical publication we receive from Great Britain. The republication of it in this country, which I am happy to learn you intend to continue, cannot fail to advance the science of medicine.

ALEX. H. STEVENS, M. D. Prof. of Surg.

I entirely concur in the above opinions respecting the character of the Medico-Chirurgical Review, believing there is no Medical Journal superior to it in point of erudition and science on either side of the Atlantic.

JOSEPH M. SMITH, M. D. Prof. of Theo. and Prac. of Phys.

I have been in the habit of reading the Medico-Chirurgical Review from its first publication in this country, and have derived more advantage from its perusal, than any other Medical Journal with which I am acquainted.

EDW. DELAFIELD, M. D. Prof. of Obstet., &c.

The public opinion has been so decidedly and favorably expressed in relation to the

Rehman

merits of Dr. Johnson's Journal as to render almost unnecessary any additional testimony in favour of the spirit and ability with which it is conducted. Devoted as this Journal is to the analysis of works to which a great proportion of the Medical Profession in this country are necessarily denied access, I have always looked upon its republication here, as a substantial service rendered to the cause of Medical Literature in the United States; and I cannot therefore but wish the enterprising publisher every success in his endeavours to give it an extended circulation.

JOHN B. BECK, M. D. Prof. of Mat. Med

The following Gentlemen have expressed their concurrence with the foregoing:

J. AUG. SMITH, M. D. Prof. of Anat. and Surg., J. D. JAKES, M. D., Treas. and Trustee of Coll. of Phys. and Surg., JAS. FREEMAN DANA, Prof. of Chemistry; J. R. RHINELANDER, M. D., Dem. of Anat.; N. H. DERING, Regist.

I state with great readiness, the high opinion I entertain of Johnson's Medico-Chirurgical Review. Among foreign periodicals none can be more useful to the American practitioner both for enlightened views and extensive information.

T. ROMEYN BECK, (Albany.)

Sir,—I consider Dr. Johnson's "Medico-Chirurgical Review" one of the best periodicals. Journals of Great Britain, and believe that your republication of it will prove a valuable accession to the Medical Literature of this country. You have my best wishes for its success.

DAVID HOSACK, M. D., Pres. of Med. Fac. of Rutgers Coll.

We fully concur in the opinion expressed by Dr. Hosack, of the value of Johnson's Journal. SAM'L. L. MITCHELL, M. D., Vice-Pres., WILLIAM J. MACNEVIN, M. D., Prof. of Ther. and Mat. Med.; VALENTINE MOTT, M. D., Prof. of Surg.; JOHN W. FRANCIS, M. D., Prof. of Obstet., &c.; JOHN D. GODMAN, M. D., Prof. of Anat. and Physiol.; JOHN GRISCOM, LL. D., Prof. of Chem.; P. S. TOWNSEND, M. D., Regist. N. CHAPMAN, M. D., Prof. of Prae. Med. of University of Pennsylvania; W. E. HORNER, M. D., Prof. of Anat.; GEORGE B. WOOD, M. D., Prof. of Mat. Med., WM. GIBSON, M. D., Prof. of Surg.; H. L. HODGE, M. D., Prof. of Obstets.; S. JACKSON, M. D., Prof. of Insts. of Med.

R. DUNGLISON, M. D., Prof. of Insts. of Med. &c., of Jefferson Medl. College of Phila.; R. M. HUSTON, M. D., Prof. of Mat. Med.; JOS. PANCOAST, M. D., Prof. of Surgl. Anat.; J. K. MITCHELL, M. D., Prof. of Prac. of Med.; THOMAS J. MUPPETER, M. D., Prof. of Prac. and Surg.; CHAS. D. MEIGS, M. D., Prof. of Obstets.

S. G. MORTON, M. D., Prof. of Anat. and Phys., of Pennsylvania College; GEORGE MCLELLAN, M. D., Prof. of Surg.; WM. RUSH, M. D., Prof. of Prac. Med.; R. M. BIRD, M. D., Prof. of Mat. Med.; SAMUEL MCLELLAN, M. D., Prof. of Obstets.

Sir,—I am much gratified to learn, that you propose to continue the republication of Johnson's Medico-Chirurgical Review. This work I have taken from its commencement in 1820, and from a comparison of it with other periodical publications, I have no hesitation in expressing my belief, that it is the best Medical Journal now published in Europe. It is not like many works of the kind, a mere temporary journal, a repository only of the most recent intelligence, but it conveys to the Profession an inestimable treasure, a full analytical view of Medical Literature, serving as a book of study for the present time, and a most valuable record for future reference. It cannot be too strongly recommended, and particularly to those who, from extensive professional avocations, or removal from good libraries, have no means of consulting the original works which daily issue from the press.

Truly and respectfully yours, THOMAS SEWELL, (Washington, D. C.)

My Dear Sir,—In compliance with your request of my opinion of the Medico-Chirurgical Review, I make no hesitation in saying, that in the style and arrangement of its matter, the number and variety of subjects discussed; the impartiality and strictness of its critiques, it is superior to any other British journal with which I am acquainted, and not inferior to any journal, European or American. The impartiality it has evinced towards American authors is an additional claim to the regard of the American Physician. I do therefore hope, most sincerely, that the Medico-Chirurgical Review will meet with a most liberal patronage, and that it will occupy a place in the library of every physician.

Very respectfully yours, W. WILLOUGHBY, (Newport, N. Y.)

The London Medico-Chirurgical Review, conducted by Dr. Johnson and others, is one of the best periodical works on Medical Science. Its republication in this country must be considered very useful to the medical profession.

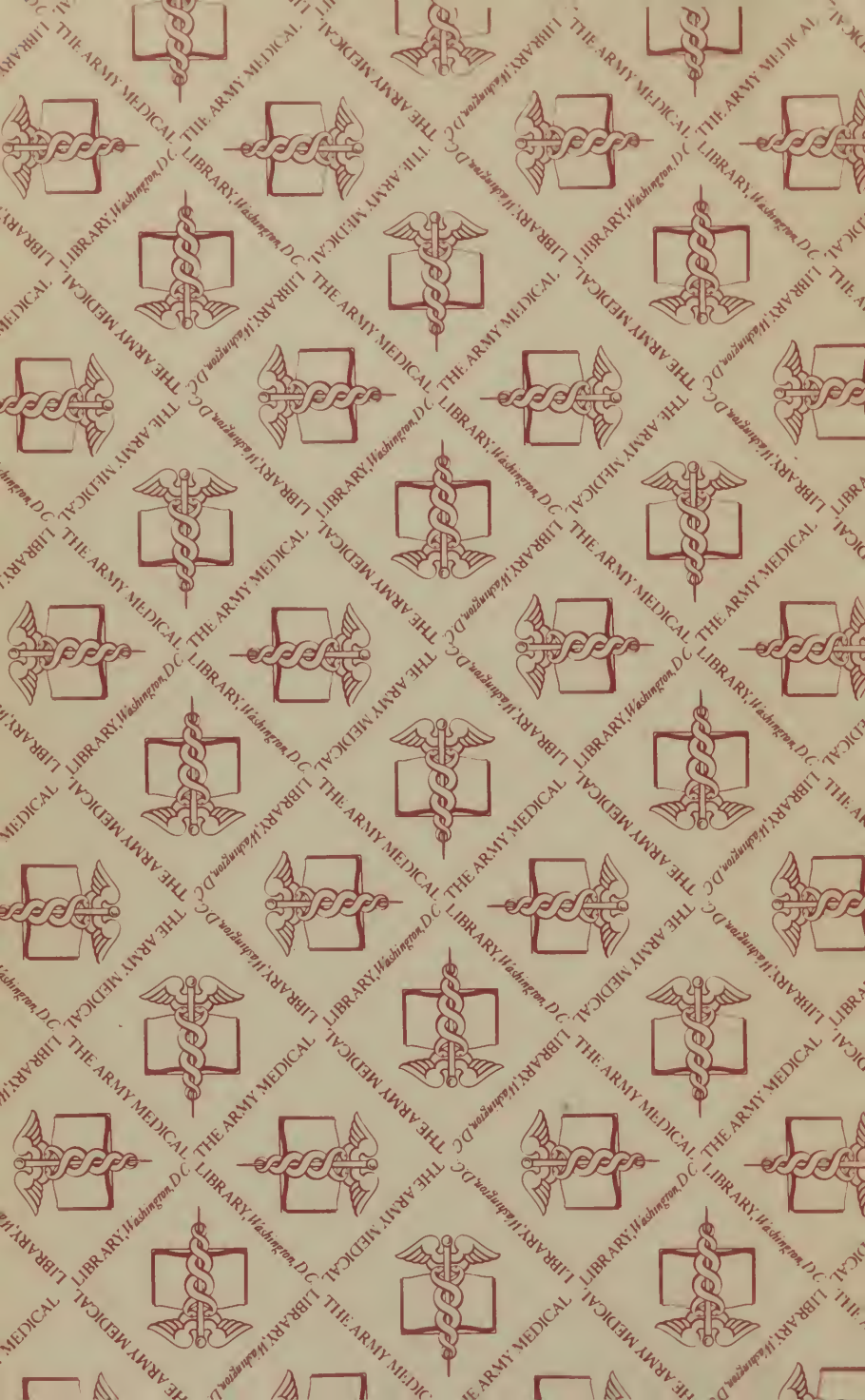
JOHN C. WARREN, (Prof. of Anat. and Surg., Boston.)

Sir,—I have been a reader of the Medico-Chirurgical Review from its first publication, and have found it at all times to contain a general view of the current medical literature of the day. This makes its pages very valuable, and enables the medical practitioner to judge what works he need to possess himself of. I hope that its republication in this country will be sufficiently encouraged. I am, Sir, your obedient servant,

JAMES JACKSON, (Boston.)

* * * Subscribers in ordering this work are requested to write their names legibly, and at full length, adding the names of the town, county, &c. of their residence.

One dollar is allowed to any Subscriber for procuring a new Subscriber and remitting payment for the same.





NATIONAL LIBRARY OF MEDICINE



NLM 04140159 0